BOOKER T WASHINGTON MIDDLE SCHOOL

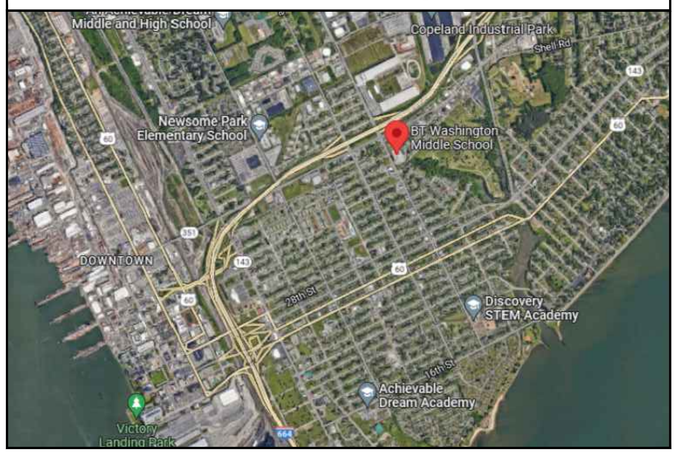
HVAC REPLACEMENT

NEWPORT NEWS PUBLIC SCHOOLS

NEWPORT NEWS, VIRGINIA

DECEMBER 20, 2024
MJT# 21-156
IFB# 010-0-2025/SNB

AREA MAP



NEWPORT NEWS PUBLIC SCHOOLS
Communities Committed to Learning

BUILDING CODE SUMMARY

- CURRENT BUILDING CODE: VIRGINIA UNIFORM STATEWIDE BUILDING CODE 2021 EDITION.
- CURRENT CONSTRUCTION CODE: VIRGINIA CONSTRUCTION CODE 2021 EDITION.
- CURRENT BUILDING CODE: VIRGINIA EXISTING BUILDING CODE 2021 EDITION. LEVEL 1 ALTERATION.
- TOTAL GROSS FLOOR AREA: 72,400 SF.
- USE GROUP CLASSIFICATION: EDUCATION GROUP E AND ASSEMBLY GROUP A3.
- CONSTRUCTION TYPE: TYPE 2A, NONCOMBUSTIBLE - FULLY SPRINKLERED AND TYPE 3A, ORDINARY - FULLY SPRINKLERED.

VICINITY MAP

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M2.2	PARTIAL FIRST FLOOR PLAN - AREA "B" - PIPING - NEW WORK
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DRAWING INDEX

SHEET NO.	DRAWING TITLES
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M3.2	PARTIAL ROOF PLAN - AREA "B" - MECHANICAL - NEW WORK
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E1.1	PARTIAL FLOOR PLAN - AREA 'A' - HVAC POWER - NEW WORK
E1.2	PARTIAL FLOOR PLAN - AREA 'B' - HVAC POWER - NEW WORK
E1.3	SECOND FLOOR PLAN - HVAC POWER - NEW WORK
E1.4	ENLARGED FLOOR PLANS - HVAC POWER - NEW WORK

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
TITLE SHEET

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: JAR
CHECKED BY: KDA

T0.1

DATE: 12/20/2024

TRUE NORTH

SITE PLAN
SCALE: NO SCALE

SITE PLAN NOTES (THIS SHEET ONLY) ☐	
NO.	DESCRIPTION
1	CONTRACTOR SHALL BE GRANTED ACCESS TO THE LIMITS OF CONSTRUCTION MONDAY THROUGH FRIDAY 7:00 AM TO 4:00 PM DURING THE CONSTRUCTION PERIOD. ACCESS TO THE BUILDING AFTER NORMAL WORKING HOURS SHALL BE ALLOWED WITH OWNER'S (NNPS) PRIOR APPROVAL AND COORDINATION.
2	STAFF PARKING, NO CONTRACTOR PARKING PERMITTED OUTSIDE DESIGNATED AREA.
3	KEEP DRIVEWAYS AND ENTRANCES SERVING THE PREMISES CLEAR AND AVAILABLE TO THE OWNER, THE OWNER'S EMPLOYEES, TEACHERS AND STAFF AND EMERGENCY VEHICLES AT ALL TIMES.
4	REFER TO THE PROJECT MANUAL SPECIFICATION SECTION 018000 "CODE OF CONDUCT" FOR ADMINISTRATIVE AND PROCEDURAL REQUIREMENTS WHILE WORKING ON SCHOOL PREMISES. REFER TO OTHER PROJECT MANUAL SPECIFICATION SECTIONS FOR ADDITIONAL REQUIREMENTS.
5	RECOMMENDED CRANE LOCATION. CONTRACTOR SHALL COORDINATE ACTUAL CRANE LOCATION WITH WORK REQUIRED. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF ALL DAMAGE TO SOD, ACCESS ROAD, AND SITE. REPAIR DAMAGE TO PRE-CONSTRUCTION CONDITIONS.
6	CONTRACTOR SHALL USE AREA AS INDICATED FOR PARKING AND STAGING OF EQUIPMENT/MATERIALS. ALL MATERIAL STORED ONSITE SHALL BE SECURED IN CONTRACTORS LOCKED CONSTRUCTION TRAILER. ALL OTHER PARKING AREAS SHALL NOT BE USED WITHOUT OWNER'S PRIOR APPROVAL.
7	ANY POWER OUTAGES AFFECTING THIS AREA SHALL ONLY TAKE PLACE DURING WEEKEND HOURS AND MUST BE COORDINATED WITH OWNER AT LEAST 7 DAYS PRIOR TO SCHEDULED OUTAGE.
8	CONTRACTOR ONLY ENTRANCE.
9	OWNER ONLY ENTRANCE.

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS
VIRGINIA
SITE PLAN

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO:	21-156
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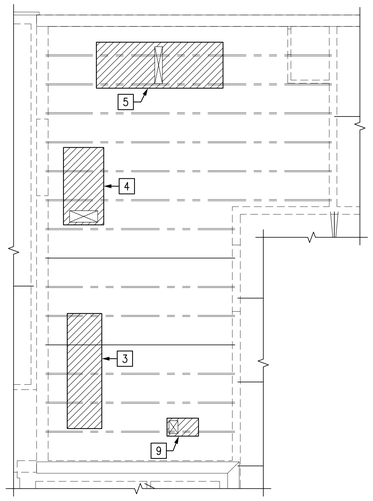
DRAWN BY:	JAR
CHECKED BY:	KDA

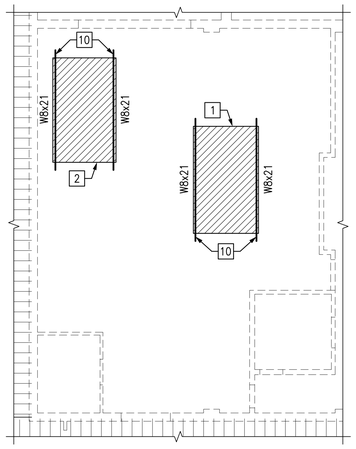
G0.1

DATE: 12/20/2024



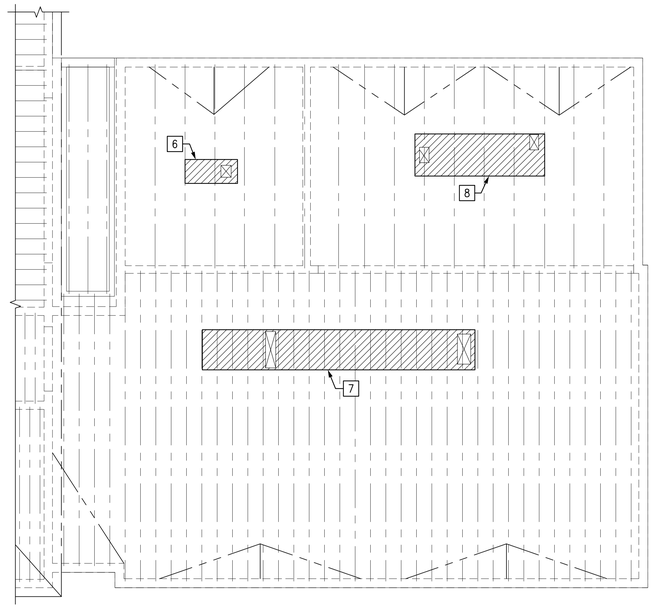
PLAN NORTH

PARTIAL MEZZANINE FRAMING PLAN
1/8" = 1'-0"



PLAN NORTH

PARTIAL MEZZANINE FRAMING PLAN
1/8" = 1'-0"



PLAN NORTH

PARTIAL ROOF FRAMING PLAN
1/8" = 1'-0"

PLAN NOTES:
1. REFER TO MECHANICAL DRAWINGS FOR DEMOLITION NOT NOTED.

KEY NOTES:
1. AHU-1, WEIGHT = 9,500 LBS.
2. AHU-2, WEIGHT = 10,000 LBS.
3. AHU-6, WEIGHT = 4,100 LBS.
4. AHU-7, WEIGHT = 2,400 LBS.
5. AHU-8, WEIGHT = 6,200 LBS.
6. MAU-1 ON CURB ADAPTER, REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.
7. RAHU-3, WEIGHT = 7,300 LBS ON CURB ADAPTER.
8. RAHU-4, WEIGHT = 3,200 LBS ON CURB ADAPTER.
9. ERU-1, WEIGHT = 1,160 LBS.
10. ATTACH STEEL BEAM TO EXISTING CONCRETE DECK WITH 5/8"ø EXPANSION ANCHORS AT 24" ON CENTER WITH 3 1/4" MINIMUM EMBEDMENT.

GENERAL NOTES:
1. ALL ITEMS SHOWN ON THIS DRAWING ARE NEW CONSTRUCTION, UNLESS OTHERWISE NOTED AS EXISTING.
2. THE CONTRACTOR SHALL COORDINATE AND VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION AND ANY DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.
3. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO FOLLOW ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION.
4. THE CONTRACTOR SHALL VERIFY THE REQUIREMENTS OF OTHER TRADES AS TO SLEEVES, ANCHORS, CHASES, INSERTS, HANGERS, HOLES, ETC. TO BE PLACED IN THE STRUCTURAL WORK.
5. THE FOLLOWING LOADS, IN ADDITION TO THE DEAD LOADS OF THE PERMANENT MATERIALS AND CONSTRUCTION, WERE USED:

   GROUND SNOW LOAD : 47 PSF
   ROOF LOAD : 20 PSF
   ULTIMATE DESIGN WIND SPEED (3 SECOND GUST) : 128 MPH
   RISK CATEGORY : III
   EXPOSURE CATEGORY : C

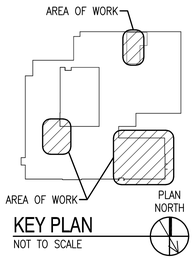
6. CONTRACTOR SHALL PROTECT EXISTING BUILDING ELEMENTS TO REMAIN. ANY DAMAGE DONE SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.

DESIGN CODES AND GOVERNING STANDARDS:
1. 2021 EDITION OF THE VIRGINIA CONSTRUCTION CODE (VCC).
2. 2021 EDITION OF THE VIRGINIA EXISTING BUILDING CODE (VEBC).
3. 2022 EDITION OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS/STRUCTURAL ENGINEERS INSTITUTE (ASCE/SEI): ASCE/SEI 7-22, "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES".
4. 2016 EDITION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC): AISC 360-16, "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS".

STRUCTURAL STEEL NOTES:
1. ALL STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:
   A. W-SHAPES - ASTM A992 GRADE 50
   B. MISCELLANEOUS SHAPES, ANGLES, PLATES AND BARS - ASTM A36
   C. PIPE - ASTM A53, GRADE B.
   D. HSS SHAPES - ASTM A500 GRADE B
   E. BOLTS - ASTM F3125
   F. NUTS - ASTM A563
   G. WASHERS - F436
   H. WELDING ELECTRODES - E70XX
2. DESIGN, FABRICATION, ERECTION AND ALL OTHER STRUCTURAL STEEL WORK SHALL CONFORM TO THE FOURTEENTH EDITION OF THE MANUAL OF STEEL CONSTRUCTION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION.
3. BOLTS SHALL BE TIGHTENED TO THE "SNUG TIGHT" CONDITION, UNLESS OTHERWISE NOTED.
4. ALL HOLES AND CUTS REQUIRED IN STRUCTURAL STEEL MEMBERS SHALL BE SHOWN ON THE SHOP DRAWINGS AND SHALL BE MADE IN THE SHOP. NO HOLES SHALL BE CUT IN THE FIELD WITHOUT THE APPROVAL OF THE ENGINEER. TORCH CUTTING IS NOT PERMITTED.

NOTE:
IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

GRAPHIC SCALE:
1/8" = 1'-0" 10' 5' 0' 10' 20'



KEY PLAN
NOT TO SCALE

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PROJECT NUMBER: 21-156

HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS
VIRGINIA

ROOF FRAMING PLAN, NOTES, AND DETAILS

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: MF
DRAWN BY: JAK
CHECKED BY: MF

S1.1

DATE: 12/20/2024

GENERAL DEMOLITION NOTES: (SHEET CP1.1 THRU CP2.1)

1. THE CONTRACTORS SHALL FIELD VERIFY ALL REFLECTED CEILING GRID ELEVATIONS, ORIENTATIONS, AND POSITIONS. REFLECTED CEILING GRID MAY VARY FROM THAT SHOWN ON THIS DRAWING. INVENTORY ALL ACOUSTIC CEILING TILES BEFORE DEMOLITION.
2. CONTRACTOR SHALL STORE AND PROTECT ALL REMOVED CEILING TILES. REPLACE ALL CRACKED, BROKEN, AND WATER STAINED TILES WITH NEW OR SALVAGED.
3. THE CONTRACTOR SHALL STORE AND PROTECT ALL REMOVED CEILING GRID FOR RE-INSTALLATION WHERE INDICATED.
4. IMPROPERLY STORED AND HANDLED MATERIALS SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
5. DURING DEMOLITION, SORT TILES REMOVED BY APPEARANCE AND CONDITION. UPON REINSTALLATION, PROVIDE TILES OF LIKE APPEARANCE TO PRESENT A UNIFORM CEILING FINISH.
6. CONTRACTOR SHALL COORDINATE EXACT QUANTITY AND LOCATION OF CEILING TILES, GRID, AND ELECTRICAL FIXTURES TO BE REMOVED WITH NEW WORK. REFER TO ELECTRICAL SHEETS FOR FIXTURES REQUIRING REMOVAL.

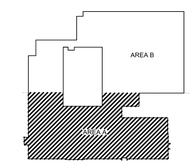
LEGEND: (SHEET CP1.1 THRU CP2.1)

- CEILING GRID AND 48" x 24" ACOUSTIC CEILING TILE TO REMAIN.
- EXTENT OF CEILING GRID AND ACOUSTIC CEILING TILE REMOVAL (DEMOLITION). EXTENT OF CEILING GRID AND ACOUSTIC TILE REINSTALLATION (NEW WORK).
- EXTENT OF PLASTER CEILING AND BULKHEAD REMOVAL (DEMOLITION). EXTENT OF NEW PLASTER CEILING AND BULKHEAD REINSTALLATION (NEW WORK).
- PLASTER CEILING TO REMAIN
- EXTENT OF AREA WITH NO CEILING, STRUCTURE IS EXPOSED
- 2' x 4' RECESSED LIGHT FIXTURES
- 1' x 4' RECESSED LIGHT FIXTURES
- 2' x 2' RECESSED LIGHT FIXTURE
- SUPPLY AIR DIFFUSER
- RETURN AIR GRILLE
- 2' x 2' CEILING ACCESS DOOR
- LINEAR SUPPLY DIFFUSER
- SPEAKER (S)
- MOTION DETECTOR (MD)
- WIRELESS ACCESS POINT (WA)
- EXIT LIGHT
- DOWN LIGHT
- CEILING MOUNTED LCD PROJECTOR

DEMOLITION NOTES	
NO.	DESCRIPTION
D1	CAREFULLY REMOVE LIMITED PORTIONS OF CEILING GRID AND CEILING TILES AS REQUIRED FOR REMOVAL OF MECHANICAL PIPING, DUCTWORK, AND EQUIPMENT. PROVIDE ADDITIONAL GRID SUPPORTS WHERE DEMOLITION OCCURS TO AVOID SAGGING OF REMAINING CEILING GRID.
D2	CAREFULLY REMOVE PLASTER OR DRYWALL CEILING AS SHOWN.

NEW WORK NOTES	
NO.	DESCRIPTION
1	AFTER INSTALLATION OF NEW WORK, PROVIDE AND INSTALL NEW CEILING TILES. REINSTALL GRID AND LIGHT FIXTURES RETAINED FROM DEMOLITION. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL LIGHT FIXTURE REQUIREMENTS. CEILING GRID AND LIGHT FIXTURES SHALL BE RESTORED TO THEIR PRE-CONSTRUCTION CONDITION. CONTRACTOR SHALL SURVEY THE CEILING TO DETERMINE SIZE AND QUANTITY OF TILES.
2	PATCH ALL PLASTER CEILINGS TO PRE-CONSTRUCTION CONDITIONS.

REFLECTED CEILING PLAN - FIRST FLOOR - AREA 'A' - DEMOLITION AND NEW WORK
SCALE: 1/8" = 1'-0"



KEY PLAN
NOT TO SCALE

TRUE NORTH

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
REFLECTED CEILING PLAN - FIRST FLOOR - AREA 'A' - DEMOLITION AND NEW WORK

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO:	21-156
DESIGNED BY:	CEP
DRAWN BY:	SLS
CHECKED BY:	KDA

CP1.1

DATE: 12/20/2024

GENERAL DEMOLITION NOTES: (SHEET CP1.1 THRU CP2.1)

1. THE CONTRACTORS SHALL FIELD VERIFY ALL REFLECTED CEILING GRID ELEVATIONS, ORIENTATIONS, AND POSITIONS. REFLECTED CEILING GRID MAY VARY FROM THAT SHOWN ON THIS DRAWING. INVENTORY ALL ACOUSTIC CEILING TILES BEFORE DEMOLITION.
2. CONTRACTOR SHALL STORE AND PROTECT ALL REMOVED CEILING TILES. REPLACE ALL CRACKED, BROKEN, AND WATER STAINED TILES WITH NEW OR SALVAGED.
3. THE CONTRACTOR SHALL STORE AND PROTECT ALL REMOVED CEILING GRID FOR RE-INSTALLATION WHERE INDICATED.
4. IMPROPERLY STORED AND HANDLED MATERIALS SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
5. DURING DEMOLITION, SORT TILES REMOVED BY APPEARANCE AND CONDITION. UPON REINSTALLATION, PROVIDE TILES OF LIKE APPEARANCE TO PRESENT A UNIFORM CEILING FINISH.
6. CONTRACTOR SHALL COORDINATE EXACT QUANTITY AND LOCATION OF CEILING TILES, GRID, AND ELECTRICAL FIXTURES TO BE REMOVED WITH NEW WORK. REFER TO ELECTRICAL SHEETS FOR FIXTURES REQUIRING REMOVAL.

DEMOLITION NOTES ⬡	
NO.	DESCRIPTION
D1	CAREFULLY REMOVE LIMITED PORTIONS OF CEILING GRID AND CEILING TILES AS REQUIRED FOR REMOVAL OF MECHANICAL PIPING, DUCTWORK, AND EQUIPMENT. PROVIDE ADDITIONAL GRID SUPPORTS WHERE DEMOLITION OCCURS TO AVOID SAGGING OF REMAINING CEILING GRID.

NEW WORK NOTES ☐	
NO.	DESCRIPTION
1	AFTER INSTALLATION OF NEW WORK, PROVIDE AND INSTALL NEW CEILING TILES. REINSTALL GRID AND LIGHT FIXTURES RETAINED FROM DEMOLITION. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL LIGHT FIXTURE REQUIREMENTS. CEILING GRID AND LIGHT FIXTURES SHALL BE RESTORED TO THEIR PRE-CONSTRUCTION CONDITION. CONTRACTOR SHALL SURVEY THE CEILING TO DETERMINE SIZE AND QUANTITY OF TILES.

LEGEND: (SHEET CP1.1 THRU CP2.1)

- CEILING GRID AND 48" x 24" ACOUSTIC CEILING TILE TO REMAIN.
- EXTENT OF CEILING GRID AND ACOUSTIC CEILING TILE REMOVAL (DEMOLITION). EXTENT OF CEILING GRID AND ACOUSTIC TILE REINSTALLATION (NEW WORK).
- EXTENT OF PLASTER CEILING AND BULKHEAD REMOVAL (DEMOLITION). EXTENT OF NEW PLASTER CEILING AND BULKHEAD REINSTALLATION (NEW WORK).
- PLASTER CEILING TO REMAIN
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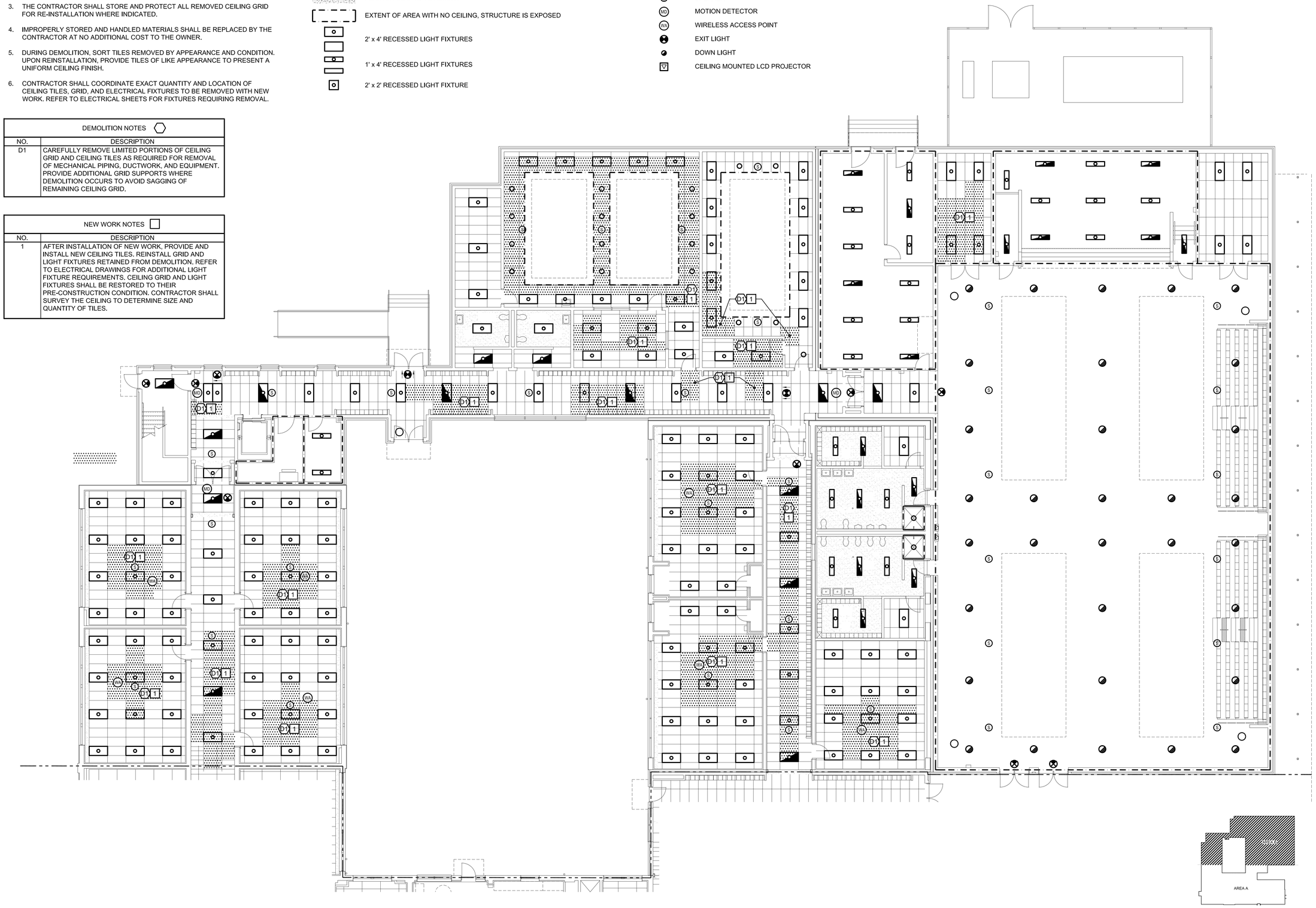
- WIRELESS ACCESS POINT
- EXIT LIGHT
- DOWN LIGHT
- CEILING MOUNTED LCD PROJECTOR



REFLECTED CEILING PLAN - FIRST FLOOR - AREA 'B' - DEMOLITION AND NEW WORK
SCALE: 1/8" = 1'-0"

KEY PLAN
NOT TO SCALE

TRUE NORTH

COMMONWEALTH OF VIRGINIA
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
REFLECTED CEILING PLAN - FIRST FLOOR - AREA 'B' - DEMOLITION AND NEW WORK

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO:	21-156
DESIGNED BY:	CEP
DRAWN BY:	SLS
CHECKED BY:	KDA

CP1.2

DATE: 12/20/2024

GENERAL DEMOLITION NOTES: (SHEET CP1.1 THRU CP2.1)

1. THE CONTRACTORS SHALL FIELD VERIFY ALL REFLECTED CEILING GRID ELEVATIONS, ORIENTATIONS, AND POSITIONS. REFLECTED CEILING GRID MAY VARY FROM THAT SHOWN ON THIS DRAWING. INVENTORY ALL ACOUSTIC CEILING TILES BEFORE DEMOLITION.
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3. THE CONTRACTOR SHALL STORE AND PROTECT ALL REMOVED CEILING GRID FOR RE-INSTALLATION WHERE INDICATED.
4. IMPROPERLY STORED AND HANDLED MATERIALS SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
5. DURING DEMOLITION, SORT TILES REMOVED BY APPEARANCE AND CONDITION. UPON REINSTALLATION, PROVIDE TILES OF LIKE APPEARANCE TO PRESENT A UNIFORM CEILING FINISH.
6. CONTRACTOR SHALL COORDINATE EXACT QUANTITY AND LOCATION OF CEILING TILES, GRID, AND ELECTRICAL FIXTURES TO BE REMOVED WITH NEW WORK. REFER TO ELECTRICAL SHEETS FOR FIXTURES REQUIRING REMOVAL.

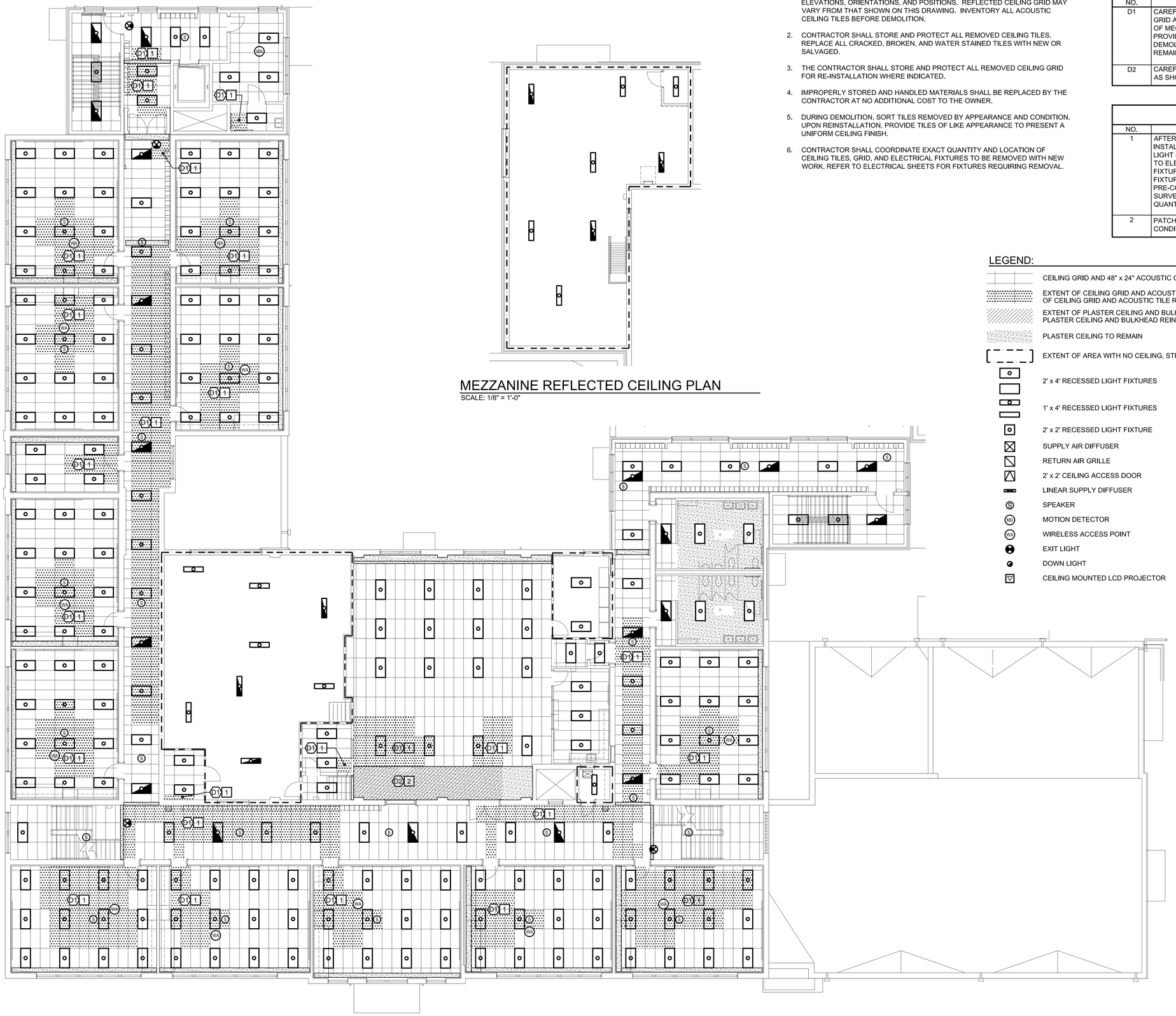
DEMOLITION NOTES ⬡	
NO.	DESCRIPTION
D1	CAREFULLY REMOVE LIMITED PORTIONS OF CEILING GRID AND CEILING TILES AS REQUIRED FOR REMOVAL OF MECHANICAL PIPING, DUCTWORK, AND EQUIPMENT. PROVIDE ADDITIONAL GRID SUPPORTS WHERE DEMOLITION OCCURS TO AVOID SAGGING OF REMAINING CEILING GRID.
D2	CAREFULLY REMOVE PLASTER OR DRYWALL CEILING AS SHOWN.

NEW WORK NOTES ☐	
NO.	DESCRIPTION
1	AFTER INSTALLATION OF NEW WORK, PROVIDE AND INSTALL NEW CEILING TILES. REINSTALL GRID AND LIGHT FIXTURES RETAINED FROM DEMOLITION. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL LIGHT FIXTURE REQUIREMENTS. CEILING GRID AND LIGHT FIXTURES SHALL BE RESTORED TO THEIR PRE-CONSTRUCTION CONDITION. CONTRACTOR SHALL SURVEY THE CEILING TO DETERMINE SIZE AND QUANTITY OF TILES.
2	PATCH ALL PLASTER CEILINGS TO PRE-CONSTRUCTION CONDITIONS.

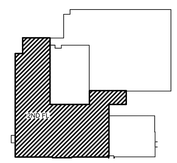
LEGEND: (SHEET CP1.1 THRU CP2.1)

- CEILING GRID AND 48" x 24" ACOUSTIC CEILING TILE TO REMAIN.
- EXTENT OF CEILING GRID AND ACOUSTIC CEILING TILE REMOVAL (DEMOLITION). EXTENT OF CEILING GRID AND ACOUSTIC TILE REINSTALLATION (NEW WORK).
- EXTENT OF PLASTER CEILING AND BULKHEAD REMOVAL (DEMOLITION). EXTENT OF NEW PLASTER CEILING AND BULKHEAD REINSTALLATION (NEW WORK).
- PLASTER CEILING TO REMAIN
- EXTENT OF AREA WITH NO CEILING, STRUCTURE IS EXPOSED
- 2' x 4' RECESSED LIGHT FIXTURES
- 1' x 4' RECESSED LIGHT FIXTURES
- 2' x 2' RECESSED LIGHT FIXTURE
- SUPPLY AIR DIFFUSER
- RETURN AIR GRILLE
- 2' x 2' CEILING ACCESS DOOR
- LINEAR SUPPLY DIFFUSER
- (S) SPEAKER
- (MD) MOTION DETECTOR
- (WA) WIRELESS ACCESS POINT
- EXIT LIGHT
- DOWN LIGHT
- CEILING MOUNTED LCD PROJECTOR

MEZZANINE REFLECTED CEILING PLAN
SCALE: 1/8" = 1'-0"



REFLECTED CEILING PLAN - SECOND FLOOR - DEMOLITION AND NEW WORK
SCALE: 1/8" = 1'-0"



KEY PLAN
NOT TO SCALE

TRUE NORTH

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12/20/2024
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
REFLECTED CEILING PLAN - SECOND FLOOR - DEMOLITION AND NEW WORK

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO:	21-156
DESIGNED BY:	CEP
DRAWN BY:	SLS
CHECKED BY:	KDA

CP1.3

DATE: 12/20/2024

GENERAL DEMOLITION NOTES

1. WHERE EQUIPMENT IS INDICATED TO BE REMOVED, IT SHALL MEAN COMPLETE REMOVAL OF EQUIPMENT, INCLUDING CURBS, SUPPORTS, GUYS, ANCHORS, BRACKETS, CONTROLS AND INCIDENTAL ITEMS CONNECTED OR FASTENED TO EQUIPMENT. OWNER MAINTAINS THE OWNERSHIP OF ALL ITEMS TAGGED OR IDENTIFIED.
2. WHERE COMPONENTS OF EQUIPMENT IS INDICATED TO BE REMOVED, IT SHALL MEAN COMPLETE REMOVAL OF THE COMPONENT, INCLUDING BUT NOT LIMITED TO SUPPORTS, ANCHORS, BRACKETS IN SUCH A MANNER TO FULLY SUPPORT THE INSTALLATION OF THE NEW EQUIPMENT COMPONENT.
3. WHERE PIPING IS INDICATED TO BE REMOVED, IT SHALL MEAN COMPLETE REMOVAL OF PIPING, INCLUDING VALVES, FITTINGS, INSULATION, SUPPORTS, HANGERS, BRACKETS, CONTROLS AND INCIDENTAL ITEMS CONNECTED OR FASTENED TO THE PIPING. PIPING IS DIAGRAMMATIC AND INDICATES THE GENERAL EXTENT OF WORK. NO ATTEMPT IS MADE TO SHOW EVERY ELL, TEE, OFFSET, FITTING AND VALVE. REMOVE PIPING AS INDICATED AND SPECIFIED.
4. WHERE DUCTWORK IS INDICATED TO BE REMOVED, IT SHALL MEAN COMPLETE REMOVAL OF DUCTWORK, INCLUDING FITTINGS, INSULATION, SUPPORTS, BRACKETS, CONTROLS AND INCIDENTAL ITEMS CONNECTED OR FASTENED TO THE DUCTWORK. DUCTWORK IS DIAGRAMMATIC AND INDICATES THE GENERAL EXTENT OF WORK. NO ATTEMPT IS MADE TO SHOW EVERY ELL, TEE, OFFSET AND FITTING. REMOVE DUCTWORK AS INDICATED AND SPECIFIED.
5. REFER TO REFLECTED CEILING PLANS FOR DEMOLITION AND NEW WORK RELATED TO CEILINGS.
6. CONTRACTOR SHALL RECLAIM AND DISPOSE OF ALL REFRIGERANT IN ACCORDANCE WITH ALL STATE AND LOCAL CODES PRIOR TO REMOVING THE EXISTING UNIT.

GENERAL NOTES

1. CONTRACTOR SHALL VISIT JOB SITE TO DETERMINE EXTENT OF WORK INVOLVED PRIOR TO BIDDING THE PROJECT.
2. THE MECHANICAL SYSTEM HAS BEEN DESIGNED IN ACCORDANCE WITH THE 2018 VIRGINIA UNIFORM STATEWIDE BUILDING CODE.
3. COORDINATE LOCATION OF ALL DUCTWORK, SUPPLY AND RETURN DEVICES, EXHAUST FANS, THERMOSTATS AND OTHER WALL OR CEILING MOUNTED EQUIPMENT WITH REFLECTED PLANS, LIGHT FIXTURES, SPRINKLER SYSTEMS AND ACCESSORIES INSTALLED BY OTHER TRADES SO AS TO PRESENT A NEAT AND ATTRACTIVE INSTALLATION THROUGHOUT THE BUILDING.
4. ALL PIPING, VALVES, DUCTWORK, ETC., SHALL BE CONCEALED UNLESS OTHERWISE NOTED.
5. PIPING ARRANGEMENTS ARE DIAGRAMMATIC.
6. PIPING PASSING THROUGH WATERPROOF MEMBRANES SHALL BE MADE WATERTIGHT.
7. ARRANGE PIPING AND DUCTWORK PARTICULARLY ABOVE CEILING AS REQUIRED TO CLEAR STRUCTURE, CONDUIT, LIGHTS, ETC., ALLOWING SPACE FOR HANGERS, INSULATION, ETC.
8. SEAL AROUND AND MAKE AIRTIGHT ALL DUCTS AND PIPES PENETRATING INSULATED CEILINGS AND WALLS.
9. DUCT DIMENSIONS MAY BE MODIFIED AS APPROVED BY ENGINEER.
10. DUCT SIZES SHOWN ARE INSIDE FREE AREA DIMENSIONS.
11. MAINTAIN PROPER CLEARANCES PER ELECTRICAL CODE ON ALL VAV BOXES AND OTHER EQUIPMENT. COORDINATE WITH ALL TRADES TO ENSURE CLEARANCES ARE NOT OBSTRUCTED.
12. INSTALL ALL VAV BOXES BETWEEN 6 INCHES MINIMUM AND 24 INCHES MAXIMUM ABOVE CEILING.
13. SPACE THERMOSTATS, HUMIDISTATS, AND SENSORS SHALL BE REINSTALLED AT EXISTING LOCATIONS.
14. ALL ROUND BRANCH DUCTS TO DIFFUSERS SHALL MATCH NECK SIZES SHOWN ON SCHEDULE, UNLESS OTHERWISE NOTED.
15. ALL DIFFUSERS, GRILLES AND REGISTERS SHALL BE SIZED TO HAVE A MINIMUM FREE AREA OF 70% AND MEET PERFORMANCE CRITERIA SCHEDULED.
16. REFER TO STRUCTURAL DRAWINGS FOR STRUCTURAL WORK REQUIRED FOR INSTALLATION OF ROOF MOUNTED HVAC EQUIPMENT.

ABBREVIATIONS

ø	DIAMETER
ADS	AIR/DIRT ELIMINATOR
AFF	ABOVE FINISHED FLOOR
AHU-x	AIR HANDLING UNIT DESIGNATION
AMP	AMPERE
APD	AIR PRESSURE DROP
B-x	BOILER DESIGNATION
BV	BALANCING VALVE
C-x	CHILLER DESIGNATION
CF	CHEMICAL FEEDER
CFM	CUBIC FEET PER MINUTE
COP	CLEANOUT PLUG
CO2	CARBON DIOXIDE
CR	CONDENSER WATER RETURN
CS	CONDENSER WATER SUPPLY
CUH-x	CABINET UNIT HEATER DESIGNATION
CW	CHILLED WATER
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
D	CONDENSATE DRAIN
DB	DRY BULB
db	DECIBELS
DDC	DIRECT DIGITAL CONTROL
DHC-x	DUCT HEATING COIL DESIGNATION
DIA	DIAMETER
DN	DOWN
DP	DIFFERENTIAL PRESSURE
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF-x	EXHAUST FAN DESIGNATION
ERU-x	ENERGY RECOVERY UNIT DESIGNATION
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EWT	ENTERING WATER TEMPERATURE
°F	DEGREES FAHRENHEIT
FD	FIRE DAMPER
FF-x	FLY FAN DESIGNATION
FLA	FULL LOAD AMPS
FPM	FEET PER MINUTE
FT	FEET
GA	GAUGE
GPM	GALLONS PER MINUTE
H	HUMIDISTAT
HP	HORSEPOWER
HP-x	HEAT PUMP DESIGNATION
HW	HOT WATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
IN	INCH/INCHES
IU-x	INDOOR (SPLIT SYSTEM A/C) UNIT DESIGNATION
KEF-x	KITCHEN HOOD EXHAUST FAN DESIGNATION
(KH)	EXISTING KITCHEN HOOD DESIGNATION
KSF-x	KITCHEN HOOD SUPPLY FAN DESIGNATION
kAIC	KILO AMPS INTERRUPTING CAPACITY
KW	KILOWATTS
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LWT	LEAVING WATER TEMPERATURE
MAU-x	MAKE-UP AIR UNIT DESIGNATION
MAV	MANUAL AIR VENT
MAX	MAXIMUM
MBH	1000 BRITISH THERMAL UNITS PER HOUR
MCA	MINIMUM CIRCUIT AMPS
MIN	MINIMUM
MOCP	MAXIMUM OVER CURRENT PROTECTION
NC	NOISE CRITERIA
NO	NUMBER
OA	OUTSIDE AIR
OU-x	OUTDOOR (SPLIT SYSTEM A/C) UNIT DESIGNATION
ΔP	PRESSURE DIFFERENTIAL
P-x	PUMP DESIGNATION
PCWR	PRIMARY CHILLED WATER RETURN
PCWS	PRIMARY CHILLED WATER SUPPLY
PH	PHASE
PSIG	POUNDS PER SQUARE INCH GAUGE
PT	PRESSURE TEST PORT
RA	RETURN AIR
RAHU-x	ROOFTOP AIR HANDLING UNIT DESIGNATION
RD	ROOF DRAIN
RL	REFRIGERANT LIQUID
RPM	REVOLUTIONS PER MINUTE
RTU-x	ROOFTOP UNIT DESIGNATION
SA	SUPPLY AIR
SCCR	SHORT CIRCUIT CURRENT RATING
SD	SMOKE DETECTOR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SENS	SENSIBLE
SF-x	SUPPLY FAN DESIGNATION
T	THERMOSTAT OR TEMPERATURE SENSOR
TYP	TYPICAL
UH-x	UNIT HEATER DESIGNATION
UL	UNDERWRITERS LABORATORIES
V	VOLTS
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS
WB	WET BULB
WC	WATER COLUMN
WG	WATER GAUGE
WPD	WATER PRESSURE DROP

LEGEND

CONTROL DAMPER
VOLUME DAMPER
SMOKE DETECTOR LOCATION
BALANCE EXISTING AIR TERMINAL TO CFM INDICATED
DIFFUSER, REGISTER, AND GRILLE, CFM AS INDICATED
HUMIDISTAT OR HUMIDITY SENSOR
FAN SWITCH
THERMOSTAT OR TEMPERATURE SENSOR, CONTROLLING UNIT AS INDICATED
SENSOR WITH GUARD
SUPPLY AIR DEVICE WITH FLEXIBLE DUCT
SUPPLY AIR DEVICE
LINEAR DIFFUSER
90° DUCT ELBOW - TURNED DOWN
DUCT ELBOW WITH TURNING VANES
FLEXIBLE DUCT
DUCT SECTION - RETURN/EXHAUST
DUCT SECTION - SUPPLY
DUCTWORK TURNING DOWN
90° DUCT ELBOW - TURNED UP
RETURN OR EXHAUST AIR DEVICE
SIDEWALL GRILLE OR REGISTER
TRANSFER GRILLE, SIZE AS INDICATED
DUCT TRANSITION
SQUARE TO ROUND DUCT TRANSITION
DUCT HEATING COIL
LINEAR DIFFUSER WITH FLEXIBLE DUCT
SUPPLY AIR DEVICE
TRANSITION
FABRIC DUCT
ROOF MOUNTED EXHAUST FAN
ROOF MOUNTED INTAKE HOOD
ROOF MOUNTED EXHAUST OR RELIEF HOOD
CEILING MOUNTED EXHAUST FAN
VARIABLE AIR VOLUME TERMINAL UNIT
VARIABLE FREQUENCY DRIVE PANEL
CLEANOUT PLUG
ROUND DUCT
DIRECTION OF AIRFLOW
POINT OF CONNECTION FOR NEW WORK
REMOVE EXISTING TO THIS POINT
DEMOLITION NOTE
EXISTING SIZES AS INDICATED
NEW WORK NOTE
ENLARGED PLAN: NUMBER "1" SEE SHEET MXXX
SECTION: LETTER "A" SEE SHEET MXXX
PHOTO: NUMBER "1" SEE SHEET MDXXX
EXISTING TO REMAIN
NEW WORK
EXISTING TO BE REMOVED
MANUAL AIR VENT
BRAIDED FLEXIBLE CONNECTION
PIPE CAP
CIRCUIT-SETTER
CIRCUIT SETTER BALANCING VALVE
CLEAN OUT - OUTSIDE OF BLDG.
CONCENTRIC REDUCER
DRYER
FLANGE CONNECTION
BRAIDED FLANGED FLEXIBLE CONNECTION
FUEL STRAINER
INLINE PUMP
JOINT CONNECTION (FLANGE)
LIFT CHECK VALVE
PLUG
PRESSURE GAUGE
PRESSURE GAUGE WITH VALVE
PRESSURE/TEMPERATURE TEST PORT
RUBBER FLEXIBLE CONNECTION

STRAINER
STRAINER, Y-TYPE, WITH BLOWDOWN VALVE
THERMOMETER
THREADED UNION
PIPE ANCHOR
DIRECTION OF FLOW IN PIPE
HEAT TRACE TAPE
PIPE REDUCER
PIPE DOWN
PIPE TEE DOWN
PIPE TEE UP
PIPE UP
PIPE BELOW GRADE OR HIDDEN
CHILLED WATER RETURN PIPING
CHILLED WATER SUPPLY PIPING
DOMESTIC WATER PIPING (CW)
CONDENSER WATER RETURN PIPING
CONDENSER WATER SUPPLY PIPING
DRAIN PIPING
DRAIN PIPING BELOW GRADE (D)
EXISTING PIPING TO REMAIN
EXISTING PIPING BELOW OR HIDDEN
GAS PIPING
HOT WATER RETURN PIPING
HOT WATER SUPPLY PIPING
NEW PIPING
PRIMARY CHILLED WATER RETURN PIPING
PRIMARY CHILLED WATER SUPPLY PIPING
PIPING TO BE REMOVED
REFRIGERANT LIQUID PIPING
REFRIGERANT GAS PIPING
PITCH OF DUCTWORK OR PIPING
PIPE SLEEVE
AUTOMATIC FLOW CONTROL VALVE
TWO-WAY AUTOMATIC CONTROL VALVE
TWO-WAY CONTROL VALVE
THREE-WAY GATE VALVE
THREE-WAY AUTOMATIC CONTROL VALVE
THREE-WAY CONTROL VALVE
AUTOMATIC AIR VENT
MANUAL AIR VENT
BALL VALVE
BACKFLOW PREVENTER
DIFFERENTIAL PRESSURE SENSOR
BUTTERFLY VALVE
BALANCING VALVE
CHECK VALVE
DRAIN VALVE
EXPANSION VALVE
DDC FLOW METER
EXISTING GAS COCK
GAS PRESSURE REGULATOR
GAS SHUT-OFF VALVE
EXISTING GATE VALVE
GATE VALVE
GATE VALVE IN RISER
BALL OR BUTTERFLY VALVE IN RISER
LIFT CHECK VALVE
PRESSURE RELIEF VALVE
PRESSURE RELIEF AND PRESSURE REDUCING VALVE
PRESSURE REDUCING VALVE
SAFETY RELIEF VALVE
VENTURI
VENTURI BALANCING VALVE
VENTURI FLOWSTATION

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
GENERAL NOTES, LEGEND AND ABBREVIATIONS

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: SLS
CHECKED BY: KDA

M0.1

DATE: 12/20/2024

SERIES FAN POWERED VAV BOX SCHEDULE

UNIT NO.	INLET VALVE			FAN DATA			HOT WATER HEATING COIL DATA					MOTOR DATA		NC RAD	NC DISCH.	SELECTION BASED ON "METALAIRE"	REMARKS
	MAX. CFM	MIN. CFM	SIZE (IN.)	SIZE	CFM	ESP	EAT (°F)	LAT (°F)	CAPACITY (MBH)	WPD (°F)	GPM	VOLTS	HP				
VAV-1.01	275	120	4	04	400	0.35	140.0	109.9	14.86	0.10	1.0	277	1/3	25	18	FCI	1 2 3 4
VAV-1.02	660	285	8	08	950	0.35	140.0	114.4	37.88	0.42	3.0	277	1/3	34	32	FCI	1 2 3 6
VAV-1.03	425	190	6	06	620	0.35	140.0	115.2	24.52	0.23	2.0	277	1/3	32	20	FCI	1 2 3 5
VAV-1.04	715	315	12	12	1040	0.35	140.0	112.7	40.48	0.57	3.0	277	1	32	21	FCI	1 2 3 5
VAV-1.05	380	165	10	10	550	0.35	140.0	111.5	21.12	0.13	1.5	277	1/3	31	20	FCI	1 2 3 5
VAV-1.06	840	370	10	10	1220	0.35	140.0	112.7	47.20	0.79	3.5	277	1	39	29	FCI	1 2 3 5
VAV-1.07	840	370	10	10	1220	0.35	140.0	112.7	47.20	0.79	3.5	277	1	39	29	FCI	1 2 3 5
VAV-1.08	690	300	12	12	1000	0.35	140.0	110.7	36.23	0.29	2.5	277	1/3	35	36	FCI	1 2 3 6
VAV-1.09	185	85	4	04	270	0.35	140.0	117.8	10.94	0.09	1.0	277	1/3	28	18	FCI	1 2 3 4
VAV-1.10	855	375	10	10	1240	0.35	140.0	112.5	47.53	0.79	3.5	277	1	39	29	FCI	1 2 3 5
VAV-1.11	225	105	4	04	340	0.35	140.0	112.1	13.78	0.10	1.0	277	1/3	25	16	FCI	1 2 3 4
VAV-1.12	265	105	4	04	340	0.35	140.0	109.9	14.87	0.06	1.0	277	1/3	29	18	FCI	1 2 3 5
VAV-1.13	400	175	6	06	580	0.35	140.0	110.9	21.59	0.13	1.5	277	1/3	32	20	FCI	1 2 3 5
VAV-1.14	725	315	8	08	1050	0.35	140.0	112.6	40.63	0.57	3.0	277	1/3	34	27	FCI	1 2 3 5
VAV-1.15	265	125	4	04	405	0.35	140.0	117.1	16.98	0.22	1.5	277	1/3	25	18	FCI	1 2 3 4
VAV-1.16	745	325	8	08	1080	0.35	140.0	112.3	41.14	0.57	3.0	277	1/3	34	28	FCI	1 2 3 5
VAV-1.17	425	185	6	06	620	0.35	140.0	115.2	24.49	0.23	2.0	277	1/3	32	20	FCI	1 2 3 5
VAV-1.18	770	340	10	10	1120	0.35	140.0	110.8	43.36	0.58	3.0	277	1	39	29	FCI	1 2 3 5
VAV-1.19	125	55	4	04	180	0.35	140.0	111.1	7.15	0.02	0.5	277	1/3	26	16	FCI	1 2 3 4
VAV-1.20	745	325	8	08	1080	0.35	140.0	112.3	41.14	0.57	3.0	277	1/3	34	28	FCI	1 2 3 5
VAV-1.21	810	355	10	10	1180	0.35	140.0	110.1	44.32	0.58	3.0	277	1	39	29	FCI	1 2 3 5
VAV-1.22	770	340	10	10	1120	0.35	140.0	110.8	43.36	0.58	3.0	277	1	39	29	FCI	1 2 3 5
VAV-1.23	810	355	10	10	1180	0.35	140.0	110.1	44.32	0.58	3.0	277	1	39	29	FCI	1 2 3 5
VAV-1.24	310	135	5	05	450	0.35	140.0	115.9	17.90	0.22	1.5	277	1/3	25	18	FCI	1 2 3 4
VAV-1.25	620	270	8	08	900	0.35	140.0	111.9	34.78	0.29	2.5	277	1/3	34	30	FCI	1 2 3 6
VAV-1.26	205	90	4	04	300	0.35	140.0	116.7	11.49	0.09	1.0	277	1/3	28	18	FCI	1 2 3 4
VAV-1.27	910	400	10	10	1320	0.35	140.0	111.8	48.84	0.79	3.5	277	1	39	29	FCI	1 2 3 5
VAV-1.28	910	400	10	10	1320	0.35	140.0	111.8	48.84	0.79	3.5	277	1	39	29	FCI	1 2 3 5
VAV-1.29	300	150	4	04	480	0.35	140.0	115.0	18.52	0.22	1.5	277	1/3	26	18	FCI	1 2 3 4
VAV-1.30	500	245	6	06	800	0.35	140.0	112.4	27.25	0.23	2.0	277	1/3	33	24	FCI	1 2 3 5
VAV-1.31	725	355	10	10	1160	0.35	140.0	110.3	44.03	0.58	3.0	277	1	39	29	FCI	1 2 3 5
VAV-1.32	95	50	4	04	150	0.35	140.0	113.4	6.58	0.02	0.5	277	1/3	26	16	FCI	1 2 3 4
VAV-1.33	1195	585	10	10	1920	0.35	140.0	110.6	72.79	1.25	5.0	277	1	40	34	FCI	1 2 3 6
VAV-1.35	190	95	4	04	310	0.35	140.0	113.4	13.15	0.10	1.0	277	1/3	25	15	FCI	1 2 3 4
VAV-1.36	185	90	4	04	300	0.35	140.0	116.7	11.49	0.09	1.0	277	1/3	28	18	FCI	1 2 3 4
VAV-1.37	190	85	4	04	280	0.35	140.0	117.5	11.12	0.09	1.0	277	1/3	28	19	FCI	1 2 3 4
VAV-1.38	175	85	4	04	280	0.35	140.0	117.5	11.12	0.09	1.0	277	1/3	28	19	FCI	1 2 3 4

REMARKS:
1. PROVIDE WITH 1" FOIL FACED INSULATION.
2. PROVIDE WITH EC MOTOR.
3. PROVIDE WITH FACTORY MOUNTED TOGGLE DISCONNECT.
4. PROVIDE WITH 2-ROW HEATING COIL.
5. PROVIDE WITH 3-ROW HEATING COIL.
6. PROVIDE WITH 4-ROW HEATING COIL.

PUMP SCHEDULE

UNIT NO.	TYPE	SYSTEM	GPM	HEAD	MOTOR DATA				SELECTION BASED ON "ARMSTRONG"	REMARKS
					HP	RPM	V	PH		
P-1	BASE-MOUNTED END SUCTION	CHILLED WATER	351	170	30	3387	460	3	4030	1 2 3 4 5 6
P-2	BASE-MOUNTED END SUCTION	CHILLED WATER (STANDBY)	351	170	30	3387	460	3	4030	1 2 3 4 5 6
P-3	BASE-MOUNTED END SUCTION	SECONDARY HOT WATER	319	150	25	3381	460	3	4030	1 2 3 4 5 6
P-4	BASE-MOUNTED END SUCTION	SECONDARY HOT WATER (STANDBY)	319	150	25	3381	460	3	4030	1 2 3 4 5 6
P-5	VERTICAL INLINE	PRIMARY HOT WATER	159.5	30	3	3114	460	3	4380	1 2 3 4 5 6
P-6	VERTICAL INLINE	PRIMARY HOT WATER	159.5	30	3	3114	460	3	4380	1 2 3 4 5 6

REMARKS:
1. PROVIDE AS PART OF PUMP PACKAGE.
2. PROVIDE MATCHED SUCTION DIFFUSER.
3. MINIMUM FLOW IS 260 GPM.
4. GROUT PACKAGED PUMP SYSTEM FRAME TO CONCRETE PAD.
5. PROVIDE WITH FULL SIZE IMPELLER.
6. REFER TO SPECIFICATION 230900 FOR VARIABLE FREQUENCY SPEED DRIVES. EACH DRIVE SHALL HAVE SEPARATE POWER CONNECTION BY DIVISION 26. REFER TO ELECTRICAL DRAWINGS FOR DETAILS. POWER AND CONTROLS WIRING FROM VFD TO PUMP BY PUMP PACKAGE MANUFACTURER.

HOT WATER UNIT HEATER SCHEDULE

MARK	STYLE	CFM	HOT WATER HEATING COIL PERFORMANCE						FAN MOTOR (HP)	SELECTION BASED ON "IEC"	REMARKS
			CAPACITY (MBH)	EAT DB(°F)	LAT DB(°F)	GPM	EWT (°F)	WPD (FT.)			
UH-A	HORIZONTAL DISCHARGE	755	34.4	68.0	109.5	4.5	140	6.4	0.17	DXY10	1 2

REMARKS:
1. PROVIDE WITH UNIT MOUNTED AND WIRED DISCONNECT SWITCH.
2. PROVIDE WITH HANGER BRACKETS.

SERIES FAN POWERED VAV BOX SCHEDULE

UNIT NO.	INLET VALVE			FAN DATA			HOT WATER HEATING COIL DATA					MOTOR DATA		NC RAD	NC DISCH.	SELECTION BASED ON "METALAIRE"	REMARKS
	MAX. CFM	MIN. CFM	SIZE (IN.)	SIZE	CFM	ESP	EAT (°F)	LAT (°F)	CAPACITY (MBH)	WPD (°F)	GPM	VOLTS	HP				
VAV-2.01	360	175	5	05	580	0.35	140.0	110.9	21.59	0.13	1.5	277	1/3	32	20	FCI	1 2 3 5
VAV-2.02	960	375	10	10	1240	0.35	140.0	112.5	47.53	0.79	3.5	277	1	39	29	FCI	1 2 3 5
VAV-2.03	960	375	10	10	1240	0.35	140.0	112.5	47.53	0.79	3.5	277	1	39	29	FCI	1 2 3 5
VAV-2.04	945	370	10	10	1220	0.35	140.0	112.7	47.20	0.79	3.5	277	1	39	29	FCI	1 2 3 5
VAV-2.05	960	375	10	10	1240	0.35	140.0	112.5	47.53	0.79	3.5	277	1	39	29	FCI	1 2 3 5
VAV-2.06	345	135	5	05	450	0.35	140.0	115.9	17.90	0.22	1.5	277	1/3	25	18	FCI	1 2 3 4
VAV-2.07	225	90	4	04	295	0.35	140.0	116.9	11.41	0.09	1.0	277	1/3	28	19	FCI	1 2 3 4
VAV-2.08	945	370	10	10	1220	0.35	140.0	112.7	47.20	0.79	3.5	277	1	39	29	FCI	1 2 3 5
VAV-2.09	905	355	10	10	1180	0.35	140.0	110.1	44.32	0.58	3.0	277	1	39	29	FCI	1 2 3 5
VAV-2.10	1300	505	10	10	1680	0.35	140.0	110.1	66.48	1.02	4.5	277	1	39	31	FCI	1 2 3 6
VAV-2.11	1040	405	10	10	1350	0.35	140.0	111.0	48.83	0.75	3.5	277	1	39	29	FCI	1 2 3 5
VAV-2.12	230	90	4	04	300	0.35	140.0	116.7	11.49	0.09	1.0	277	1/3	28	18	FCI	1 2 3 4
VAV-2.13	1045	405	10	10	1350	0.35	140.0	111.0	48.83	0.75	3.5	277	1	39	29	FCI	1 2 3 5
VAV-2.14	215	85	4	04	280	0.35	140.0	117.5	11.12	0.09	1.0	277	1/3	28	19	FCI	1 2 3 4
VAV-2.15	900	340	10	10	1140	0.35	140.0	110.6	43.65	0.58	3.0	277	1	39	29	FCI	1 2 3 5
VAV-2.16	1045	405	10	10	1350	0.35	140.0	111.0	48.83	0.75	3.5	277	1	39	29	FCI	1 2 3 5
VAV-2.17	1090	425	10	10	1410	0.35	140.0	111.0	57.25	0.79	4.0	277	1/2	39	34	FCI	1 2 3 6
VAV-2.18	960	375	10	10	1240	0.35	140.0	112.5	47.53	0.79	3.5	277	1	39	29	FCI	1 2 3 5
VAV-2.19	960	375	10	10	1240	0.35	140.0	112.5	47.53	0.79	3.5	277	1	39	29	FCI	1 2 3 5
VAV-2.20	1040	405	10	10	1350	0.35	140.0	111.0	48.83	0.75	3.5	277	1	39	29	FCI	1 2 3 5
VAV-2.22	215	85	4	04	280	0.35	140.0	117.5	11.12	0.09	1.0	277	1/3	28	19	FCI	1 2 3 4
VAV-2.23	215	85	4	04	280	0.35	140.0	117.5	11.12	0.09	1.0	277	1/3	28	19	FCI	1 2 3 4

REMARKS:
1. PROVIDE WITH 1" FOIL FACED INSULATION.
2. PROVIDE WITH EC MOTOR.
3. PROVIDE WITH FACTORY MOUNTED TOGGLE DISCONNECT.
4. PROVIDE WITH 2-ROW HEATING COIL.
5. PROVIDE WITH 3-ROW HEATING COIL.
6. PROVIDE WITH 4-ROW HEATING COIL.

DUCT HEATING COIL SCHEDULE

UNIT NO.	CFM	HOT WATER HEATING COIL PERFORMANCE							SIZE H" x W"	SELECTION BASED ON "JOHNSON CONTROLS"	REMARKS
		CAPACITY TOTAL (MBH)	EAT DB(°F)	LAT DB(°F)	GPM	EWT (°F)	LWT (°F)	WPD (FT.)			
DHC-1	2000	54.2	56.8	81.8	4.0	140	110	0.1	25/24	BDW	1 2

REMARKS:
1. PROVIDE WITH DUCT FLANGE.
2. PROVIDE WITH LINE VOLTAGE THERMOSTAT.

BOILER SCHEDULE

UNIT NO.	DESCRIPTION	INPUT (MBH)	OUTPUT (MBH)	FUEL TYPE	GPM	LWT (°F)	INTAKE SIZE (INCHES)	EXHAUST SIZE (INCHES)	ELECTRICAL		SELECTION BASED ON "LOCHINVAR"	REMARKS
									V	PH		
B-1	GAS FIRED CONDENSING BOILER	2500	2400	NATURAL GAS	159.5	140	8	9	208	3	FB-2501	1 2 3 4
B-2	GAS FIRED CONDENSING BOILER	2500	2400	NATURAL GAS	159.5	140	8	9	208	3	FB-2501	1 2 3 4

REMARKS:
1. PROVIDE WITH PVC INTAKE.
2. PROVIDE STAINLESS STEEL "AL29-4C" EXHAUST FLUE.
3. PROVIDE WITH CONDENSATE DRAIN TRAP ASSEMBLY AND NEUTRALIZATION TANK BY BOILER MANUFACTURER.
4. PROVIDE WITH NEOPRENE ISOLATION PADS.

SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE

MARK	INDOOR UNIT							CAPACITY	OUTDOOR UNIT									REMARKS
	CFM	EAT		SELECTION BASED ON "LG"	ELECTRICAL			COOLING (MBH)	MARK	EAT		SELECTION BASED ON "LG"	ELECTRICAL				OPERATING WEIGHT (LBS)	
		DB(°F)	WB(°F)		RLA	V	PH			DB(°F)	WB(°F)		MCA	MOCP	V	PH		
SS-1 IU	537	80.0	67.0	ARNU24SKA4	0.52	208	1	24.2	SS-1 OU	95	78	ARUN024GSS4	20	30	208	1	17.0	159	1 2 3 4 5 6 7 8
SS-2 IU	537	80.0	67.0	ARNU24SKA4	0.52	208	1	24.2	SS-2 OU	95	78	ARUN024GSS4	20	30	208	1	17.0	159	1 2 3 4 5 6 7 8
SS-3 IU	706	80.0	67.0	ARNU30SVA4	0.51	208	1	30.0	SS-3 OU	95	78	ARUM036GSS5	24	40	208	1	23.0	263	1 2 3 4 5 6 7 8

REMARKS:
1. COOLING ONLY UNIT.
2. PROVIDE WITH INTEGRAL CONDENSATE PUMP.
3. POWER & CONTROL WIRING TO INDOOR UNIT SHALL BE SERVED FROM OUTDOOR UNIT. WIRING PROVIDED BY MANUFACTURER, INSTALLED BY DIVISION 26.
4. WALL MOUNTED INDOOR UNIT MOUNTED 7'6" AFF TO BOTTOM OF UNIT.
5. PROVIDE WITH WALL MOUNTED WIRED CONTROLLER.
6. PROVIDE MINI-SPLIT SECURITY CAGE INCLUDING TOP BAR, MOUNTING BRACKETS, AND ATTACHMENT HARDWARE.
7. PROVIDE INDOOR UNIT WITH 14/4 CONDUCTOR AND SINGLE-POLE DISCONNECT SWITCH BY UNIT MANUFACTURER.
8. CAPACITIES BASED ON 95°F DB / 78°F WB SUMMER, 47°F WINTER AMBIENT CONDITIONS. PROVIDE WITH LOW AMBIENT CONTROLS FOR OPERATIONS DOWN TO 0°F.

FAN COIL UNIT SCHEDULE

MARK	TYPE	FAN DATA					COOLING						HEATING					SELECTION BASED ON "IEC"	REMARKS
		CFM	ESP (IN.)	HP	V	PH	TOTAL MBH	SENS MBH	EAT		EWT (°F)	GPM	PD (FT.)	MBH	EAT (°F)	EWT (°F)	GPM	PD (FT.)	
									DB(°F)	WB(°F)									
FCU-A	HORIZONTAL CONCEALED CABINET	300	0.25	0.17	115	1	10.9	7.4	80.0	67.0	42.0	2.0	10.9	11.8	68.0	140.0	1.0	1.3	CBY04	1 2

REMARKS:
1. PROVIDE 3-ROW COOLING COIL AND 2-ROW HEATING COIL.
2. HORIZONTAL CONCEALED CABINET STYLE.

COMMONWEALTH OF VIRGINIA
KEVIN D. ALLEN
Lic. No. 023349
12/20/2024
PROFESSIONAL ENGINEER

THOMPSON
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22 ENTERPRISE PARKWAY HAMPTON, VA 23666
TELEPHONE: (757) 599-4415 PROJECT NUMBER: 21-156

HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
MECHANICAL SCHEDULES

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: SLS
CHECKED BY: KDA

M0.2

DATE: 12/20/2024

EXHAUST FAN SCHEDULE

UNIT NO.	TYPE	ARRANGEMENT	WHEEL	DRIVE	CFM	ESP (IN. WC)	FAN (RPM)	MAX. TIP SPEED	OUTLET VELOCITY FPM	MOTOR DATA HP (W)	V	PH	CONTROL METHOD	MAX. SONES	SELECTION BASED ON "GREENHECK"	REMARKS
EF-1	POWER ROOF VENTILATOR	DOWNBLAST	BACKWARD INCLINED	DIRECT	1280	0.65	1254	4309	1143	1/2	115	1	DDC	10.1	G-130-VG	1 4 5
EF-2	POWER ROOF VENTILATOR	DOWNBLAST	BACKWARD INCLINED	DIRECT	600	0.20	1444	4111	857	1/10	115	1	DDC	6.5	G-090-VG	1 4 5 7
EF-3	CEILING FAN	CABINET	FORWARD CURVED	DIRECT	85	0.18	827	1191	258	(12)	115	1	WALL SWITCH	0.5	SP-A110	1 2 4 5 7
EF-4	POWER ROOF VENTILATOR	DOWNBLAST	BACKWARD INCLINED	DIRECT	300	0.20	1561	3321	769	1/15	115	1	DDC	5.0	G-070-VG	1 4 5 7
EF-5	CEILING FAN	CABINET	FORWARD CURVED	DIRECT	150	0.19	1181	1701	455	(31)	115	1	WALL SWITCH	1.2	CSP-A190	1 2 4 5 7
EF-6	INLINE	HORIZONTAL	BACKWARD INCLINED	DIRECT	1200	0.19	1189	4084	698	1/2	115	1	DDC	7.6	SQ-120-VG	1 4 5 7 8
EF-7	INLINE	HORIZONTAL	BACKWARD INCLINED	DIRECT	360	0.125	1443	4109	360	1/10	115	1	DDC	6.4	SQ-80-VG	1 3 4 5 6 7 9
EF-8	CEILING FAN	CABINET	FORWARD CURVED	DIRECT	150	0.19	1164	1676	455	(28)	115	1	WALL SWITCH	1.4	SP-A190	1 2 4 5 7
TF-1	INLINE	HORIZONTAL	BACKWARD INCLINED	DIRECT	475	0.125	1061	2179	1056	1/6	115	1	DDC	1.8	CSP-A510-VG	1 4 7 8

REMARKS:
1. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. PROVIDE AND INSTALL WALL MOUNTED SWITCH FOR FAN OPERATION.
3. PROVIDE SPARK RESISTANT FAN AND EXPLOSION PROOF MOTOR.
4. PROVIDE WITH BACKDRAFT DAMPER AND INTEGRAL DISCONNECT SWITCH.
5. PROVIDE WITH EC MOTOR.
6. PROVIDE WITH EPOXY COATING ON ALL FAN COMPONENTS.
7. PROVIDE WITH SOLID STATE SPEED CONTROLLER.
8. PROVIDE WITH LINE VOLTAGE THERMOSTAT.
9. ALUMINUM CONSTRUCTION WITH CONTINUOUSLY WELDED HOUSING.

GRILLE, REGISTER & DIFFUSER SCHEDULE

MARK	NECK SIZE	DESCRIPTION	MATERIAL	FINISH	VOLUME DAMPER	SHAPE	MAXIMUM ΔP	MAXIMUM NC	SELECTION BASED ON "PRICE"	REMARKS
F	6"	LINEAR SLOT DIFFUSER	STEEL	WHITE	NO	RECTANGULAR	0.1"	25	SDBI	2 3
W	22" x 22"	CEILING RETURN OR EXHAUST GRILLE 45° DEFLECTION, 3/4" SPACING	STEEL	WHITE	NO	SQUARE	0.1"	25	530	1
X	18" x 18"	CEILING RETURN OR EXHAUST GRILLE 45° DEFLECTION, 3/4" SPACING	STEEL	WHITE	NO	SQUARE	0.1"	25	530	1
Y	12" x 12"	CEILING RETURN OR EXHAUST GRILLE 45° DEFLECTION, 3/4" SPACING	STEEL	WHITE	NO	SQUARE	0.1"	25	530	1
Z	8" x 8"	CEILING RETURN OR EXHAUST GRILLE 45° DEFLECTION, 3/4" SPACING	STEEL	WHITE	NO	SQUARE	0.1"	25	530	1

REMARKS:
1. REFER TO REFLECTED CEILING PLAN FOR CEILING TYPES. FOR ACOUSTIC CEILING, PROVIDE WITH 24" x 24" PANEL SUITABLE FOR MOUNTING IN LAY-IN GRID. FOR GYPSUM BOARD CEILING, PROVIDE WITH SMALL FACE AND SURFACE MOUNT FRAME.
2. PROVIDE WITH (1) 3/4 INCH SLOT CONFIGURATION AND 48 INCH LENGTH.
3. PROVIDE WITH INSULATED PLENUM.

FLY FAN SCHEDULE

UNIT NO.	SIZE	CFM	HEATING MBH	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	GPM	WPD (FT.)	HP	VOLTS	PH.	SELECTION BASED ON "BERNER INTERNATIONAL"	REMARKS
FF-1	36" WIDE	1393	34.0	68.0	90.0	140.0	126.0	5.0	0.7	1/2	115	1	ADH10-1036W	1 2 3

REMARKS:
1. PROVIDE WITH REMOTE MOUNTED THERMOSTAT.
2. PROVIDE WITH AUTOMATIC DOOR SWITCH.
3. PROVIDE WITH TIME DELAY RELAY.

HOT WATER CABINET UNIT HEATER SCHEDULE

UNIT NO.	UNIT CONFIGURATION	CFM	HEATING MBH	EAT (°F)	EWT (°F)	GPM	WPD (FT.)	MOTOR DATA HP	VOLTS	PH	SELECTION BASED ON "IEC"	REMARKS
CUH-A	VERTICAL CABINET HOT WATER	400	20.1	68.0	140.0	5.0	4.8	0.17	115	1	GSY06	1 2 3 4

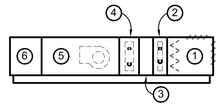
REMARKS:
1. WALL MOUNTED VERTICAL CABINET STYLE UNIT.
2. FRONT TOP SPACE INLET, FRONT STAMPED LOUVER OUTLET.
3. PROVIDE WITH 24 VOLT CONTROL INTERLOCKED WITH DDC.
4. PROVIDE WITH UNIT MOUNTED AND WIRED DISCONNECT SWITCH.

HEAT TRACE SCHEDULE

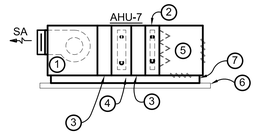
EQUIPMENT SERVED	EMERGENCY POWERED	NO. OF STRIPS	WATTS/LF	V	PH	METHOD OF CONTROL	REMARKS
RAHU SUPPLY WATER PIPING	NO	2	8	120	1	DDC	1 2 3
RAHU RETURN WATER PIPING	NO	2	8	120	1	DDC	1 2 3
MAU SUPPLY WATER PIPING	NO	2	8	120	1	DDC	1 2 3
MAU RETURN WATER PIPING	NO	2	8	120	1	DDC	1 2 3

REMARKS:
1. REFER TO SPECIFICATION 230500 FOR ADDITIONAL REQUIREMENTS.
2. FIELD VERIFY TOTAL LENGTH OF HEAT TRACE REQUIRED INCLUDING LENGTH FOR VALVES AND FITTINGS.
3. INSULATE PIPING WITHIN UNIT CABINET AND ROOF CURB.

RAHU-4 COMPONENTS
1. FILTER MIXING BOX
2. HOT WATER COIL MODULE
3. ACCESS MODULE
4. CHILLED WATER COIL MODULE
5. SUPPLY FAN MODULE
6. DISCHARGE PLENUM



AHU-7 COMPONENTS
1. SUPPLY FAN MODULE
2. HOT WATER COIL MODULE
3. ACCESS MODULE
4. CHILLED WATER COIL MODULE
5. FILTER MIXING BOX
6. CONCRETE HOUSEKEEPING PAD
7. 6" BASE RAIL



ROOFTOP AIR HANDLING UNIT SCHEDULE

UNIT NO.	SUPPLY FAN DATA CFM TOTAL	CFM MIN. O.A.	E.S.P. (IN.WG)	RPM	MOTOR DATA H.P.	V	PH	FLA	HEATING COIL PERFORMANCE MIN. COIL F.A.(SF)	E.A.T. (°F)	L.A.T. (°F)	MBH	GPM	W.P.D. (FT.)	A.P.D. (IN.)	E.W.T. (°F)	COOLING COIL PERFORMANCE MIN. COIL F.A.(SF)	E.W.T. (°F)	E.A.T. °F DB	°F WB	L.A.T. °F DB	°F WB	MBH TOTAL	MBH SENS.	GPM	W.P.D. (FT.)	A.P.D. (IN.)	UNIT WEIGHT (LBS)	SELECTION BASED ON "YORK"	REMARKS
RAHU-4	1675	200	0.75	1830	1	460	3	15	6.7	61.6	90.5	52	3.5	0.4	0.05	140	6.7	42.0	77.4	64.4	54.5	53.0	55	41	8.0	6.0	0.15	3111	XTO-33x66	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

REMARKS:
1. PROVIDE WITH UNIT MOUNTED VARIABLE FREQUENCY DRIVE.
2. UNIT DIMENSIONS CUSTOMIZED TO FIT EXISTING ROOF CURB.
3. PROVIDE WITH FACTORY MOUNTED MOTOR OVERLOAD PANEL WHICH SHALL TAKE ONE FIELD VFD POWER INPUT AND DISTRIBUTE TO SUPPLY/EXHAUST FANS. EACH FAN SHALL BE PROTECTED BY INLINE FUSE BLOCK WITH FUSES. PANEL ENCLOSURE SHALL BE NEMA-1.
4. PREHEAT COIL PERFORMANCE CALCULATED AT MINIMUM CFM AND WITHOUT HEAT RECOVERY.
5. PROVIDE WITH DOOR HOLD OPEN LATCHES ON ALL ACCESS DOORS.
6. PROVIDE WITH PHASE FAILURE MONITOR AND BROWNOUT PROTECTION.
7. HEATING COIL PERFORMANCE DATA ENTERING AIR TEMPERATURES BASED ON 15°F DB / 14°F WB AMBIENT, 68°F DB / 54°F WB RETURN AIR TEMPERATURES, AND A FAILED ENERGY WHEEL CONDITION.
8. SUPPLY AND EXHAUST FAN INLET AIR FLOW MEASURING PIEZO RINGS PROVIDED BY AHU MANUFACTURER. FAN INLET AIR FLOW TRANSMITTERS AND OUTSIDE AIR FLOW STATIONS PROVIDED AND INSTALLED BY DDC CONTRACTOR.
9. COOLING COIL PERFORMANCE DATA BASED ON GROSS COIL CAPACITY. ENTERING AIR TEMPERATURES BASED ON 95°F DB / 78°F WB AMBIENT, 77°F DB / 66°F WB RETURN AIR TEMPERATURES, AND A FAILED ENERGY WHEEL CONDITION.
10. PROVIDE CONDENSATE DRAIN PAN OVERFLOW PROTECTION SWITCH. COORDINATE INTERLOCK AND SHUT DOWN REQUIREMENTS WITH AUTOMATIC TEMPERATURE CONTROLS CONTRACTOR.
11. PROVIDE WITH FACTORY-DIPPED POLYMER E-COATED EVAPORATOR, CONDENSER, AND REHEAT COILS.
12. COORDINATE WITH AUTOMATIC TEMPERATURE CONTROLS CONTRACTOR AND ON DRAWING SEQUENCES OF OPERATIONS FOR ALL REQUIRED CONTROL POINTS.
13. PROVIDE WITH BIPOLAR IONIZATION AIR PURIFICATION SYSTEM. REFER TO SPECIFICATION 230500 FOR REQUIREMENTS. A 24 VOLT STEP DOWN TRANSFORMER SHALL BE PROVIDED BY THE EQUIPMENT MANUFACTURER.
14. OA AND EXHAUST CFM VALUES DO NOT INCLUDE CFM FOR PURGE.
15. CONSTANT VOLUME UNIT. PROVIDE WITH NON-POWERED RECEPTACLE.

AIR HANDLING UNIT SCHEDULE

UNIT NO.	SUPPLY FAN DATA CFM TOTAL	CFM MIN. O.A.	E.S.P. (IN.WG)	RPM	MOTOR DATA H.P.	V	PH	MCA	MOCP	COOLING COIL PERFORMANCE MIN. COIL F.A.(SF)	E.W.T. (°F)	E.A.T. °F DB	°F WB	L.A.T. °F DB	°F WB	MBH TOTAL	MBH SENS.	GPM	W.P.D. (FT.)	A.P.D. (IN.)	HEATING COIL PERFORMANCE MIN. COIL F.A.(SF)	E.A.T. (°F)	L.A.T. (°F)	CAPACITY (MBH)	GPM	W.P.D. (FT.)	A.P.D. (IN.)	E.W.T. (°F)	UNIT WEIGHT (LBS)	SELECTION BASED ON "YORK"	REMARKS
AHU-7	5600	2670	1.0	2041	5	460	3	8.3	12.0	11.5	42.0	84.6	69.9	54.7	53.8	276	180	39.5	10.5	0.87	11.5	42.7	90.7	292	20.0	3.5	0.27	140	2363	XTI-42x63	1 2 3 4 5 6 7 8 9 10 11

REMARKS:
1. PROVIDE WITH SINGLE POINT POWER CONNECTION, NON-POWERED RECEPTACLE, AND UNIT MOUNTED VARIABLE FREQUENCY DRIVE.
2. PROVIDE WITH FACTORY MOUNTED MOTOR OVERLOAD PANEL WHICH SHALL TAKE ONE FIELD VFD POWER INPUT AND DISTRIBUTE TO SUPPLY/EXHAUST FANS. EACH FAN SHALL BE PROTECTED BY INLINE FUSE BLOCK WITH FUSES. PANEL ENCLOSURE SHALL BE NEMA-1.
3. PROVIDE WITH DOOR HOLD OPEN LATCHES ON ALL ACCESS DOORS AND A BASE RAIL.
4. HEATING COIL PERFORMANCE DATA ENTERING AIR TEMPERATURES BASED ON 15°F DB / 14°F WB AMBIENT, 68°F DB / 54°F WB RETURN AIR TEMPERATURES, AND A FAILED ENERGY WHEEL CONDITION.
5. CONSTANT VOLUME UNIT.
6. SUPPLY AND EXHAUST FAN INLET AIR FLOW MEASURING PIEZO RINGS PROVIDED BY AHU MANUFACTURER. FAN INLET AIR FLOW TRANSMITTERS AND OUTSIDE AIR FLOW STATIONS PROVIDED AND INSTALLED BY DDC CONTRACTOR.
7. COOLING COIL PERFORMANCE DATA BASED ON GROSS COIL CAPACITY. ENTERING AIR TEMPERATURES BASED ON 95°F DB / 78°F WB AMBIENT, 77°F DB / 66°F WB RETURN AIR TEMPERATURES, AND A FAILED ENERGY WHEEL CONDITION.
8. PROVIDE CONDENSATE DRAIN PAN OVERFLOW PROTECTION SWITCH. COORDINATE INTERLOCK AND SHUT DOWN REQUIREMENTS WITH AUTOMATIC TEMPERATURE CONTROLS CONTRACTOR.
9. PROVIDE WITH FACTORY-DIPPED POLYMER E-COATED EVAPORATOR, CONDENSER, AND REHEAT COILS.
10. COORDINATE WITH AUTOMATIC TEMPERATURE CONTROLS CONTRACTOR AND ON DRAWING SEQUENCES OF OPERATIONS FOR ALL REQUIRED CONTROL POINTS.
11. PROVIDE WITH BIPOLAR IONIZATION AIR PURIFICATION SYSTEM. REFER TO SPECIFICATION 230500 FOR REQUIREMENTS. A 24 VOLT STEP DOWN TRANSFORMER SHALL BE PROVIDED BY THE EQUIPMENT MANUFACTURER.

KITCHEN HOOD EQUIPMENT SCHEDULE

UNIT NO.	HOOD DATA SIZE	HOOD DATA SELECTION BASED ON	EXHAUST FAN DATA MARK	CFM	ESP	RPM	HP	VOLTS	PH	SELECTION BASED ON	MAKE-UP AIR UNIT DATA MARK	CFM	ESP	RPM	HP	VOLTS	PH	INPUT (MBH)	OUTPUT (MBH)	TEMP RISE (°F)	FUEL	SELECTION BASED ON	REMARKS
KH-1	EXISTING TO REMAIN	EXISTING TO REMAIN	KEF-1	3600	1.5	1132	2	208	3	"CAPTIVEAIRE" NCA18FA	MAU-1	2880	0.5	1192	1.5	208	3	183.9	169.2	55	NATURAL GAS	"CAPTIVEAIRE" A2-D.250-20D	1 2 3
KH-2	EXISTING TO REMAIN	EXISTING TO REMAIN																					

REMARKS:
1. KITCHEN HOOD AND CONTROLS EXISTING TO REMAIN.
2. MAKEUP FAN AND EXHAUST FAN SHALL BE PROVIDED AS ROOFTOP PACKAGE ON EXISTING COMBINATION ROOF CURB AND MAKEUP AIR INLET DUCT.
3. REFER TO DETAILS ON DRAWING M5.2.

COMMONWEALTH OF VIRGINIA
KEVIN D. ALLEN
Lic. No. 023349
12/20/2024
PROFESSIONAL ENGINEER

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TELEPHONE: (757) 599-6435 PROJECT NUMBER: 21-156

HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
MECHANICAL SCHEDULES

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: SLS
CHECKED BY: KDA

M0.3

DATE: 12/20/2024

HEAT RECOVERY AIR HANDLING UNIT SCHEDULE

UNIT NO.	TOTAL CFM	ENERGY WHEEL SUPPLY AIR DATA								ENERGY WHEEL RETURN AIR DATA								ENERGY WHEEL MOTOR DATA					MIXED AIR DATA			FAN DATA												HOT WATER PREHEAT COIL PERFORMANCE							COOLING COIL PERFORMANCE					
		COOLING				HEATING				EXH. CFM	COOLING			HEATING				V	PH	HP	MCA	MOCP	MIXED AIR CFM	COOLING	HEATING	SUPPLY					EXHAUST						ELEC.		MIN. COIL F.A.(SF)	CAPACITY MBH	E.A.T. °F	L.A.T. °F	MAX. APD IN	GPM	E.W.T. °F	L.W.T. °F	MAX. WPD FT.	MIN. COIL F.A.(SF)	CAPACITY		E.A.T. °F	L.A.T. °F
		OA CFM	E.A.T. °F DB/°F WB	L.A.T. °F DB/°F WB	APD	E.A.T. °F DB/°F WB	L.A.T. °F DB/°F WB	APD			E.A.T. °F DB/°F WB	L.A.T. °F DB/°F WB	APD	E.A.T. °F DB/°F WB	L.A.T. °F DB/°F WB	APD								°F DB/ °F WB	°F DB/ °F WB	CFM	E.S.P. IN.	HP	FAN QTY	MCA	MOCP	CFM	E.S.P. IN.	HP	FAN QTY	MCA	MOCP	V	PH										TOTAL MBH	SENS MBH	DB/°F WB	DB/°F WB
AHU-1	16090	6780	95.0 / 78.0	80.7 / 67.8	1.12	15.0 / 14.0	51.7 / 43.8	1.12	6780	75.0 / 62.5	86.5 / 74.7	1.13	68.0 / 54.0	33.1 / 29.3	1.13	460	3	1/4	1.1	1.3	16090	77.4 / 64.7	60.8 / 49.7	16090	2.5	15	2	39.4	50.0	16090	1.5	15	1	25.6	45.0	460	3	33.7	314	44.0	61.2	0.12	21.5	140.0	110.0	1.5	33.7	691	480	77.4 / 64.7	49.9 / 49.5
AHU-2	16500	5880	95.0 / 78.0	80.1 / 53.4	0.98	15.0 / 14.0	53.4 / 45.0	0.98	5880	75.0 / 62.5	86.6 / 74.7	0.99	68.0 / 54.0	33.1 / 29.3	0.99	460	3	1/4	1.1	1.3	16500	77.1 / 64.5	62.8 / 50.8	16500	2.0	10	2	28.1	40.0	18330	1.5	15	1	25.6	45.0	460	3	34.3	298	48.0	64.1	0.12	20.5	140.0	110.0	1.3	34.3	701	489	77.1 / 64.5	49.7 / 49.3
AHU-6	3725	1830	95.0 / 78.0	79.3 / 66.7	0.81	15.0 / 14.0	55.7 / 46.3	0.81	1830	75.0 / 62.5	87.8 / 75.8	0.82	68.0 / 54.0	29.1 / 25.5	0.82	460	3	0.17	0.4	1.0	3725	78.0 / 65.2	62.0 / 50.2	3725	3.0	5	1	8.3	12.0	3725	0.75	5	1	8.3	12.0	460	3	7.8	70	42.0	60.6	0.12	5.0	140.0	110.0	0.3	7.8	166	114	78.0 / 65.2	49.7 / 49.5
AHU-8	6900	6900	95.0 / 78.0	82.2 / 70.0	1.14	15.0 / 14.0	51.4 / 43.7	1.14	6900	75.0 / 62.5	86.0 / 74.3	1.15	68.0 / 54.0	36.3 / 32.5	1.15	460	3	1/4	1.1	1.3	6900	81.0 / 68.0	51.4 / 43.7	6900	1.0	7.5	1	13.8	20.0	6900	0.5	5	1	8.3	12.0	460	3	16.1	307	15.0	55.1	0.15	21.0	140.0	110.0	3.7	16.1	306	201	68.0 / 54.1	54.1 / 53.3

REMARKS:

1. PROVIDE WITH UNIT MOUNTED VARIABLE FREQUENCY DRIVE.
2. PROVIDE UNIT WITH BASERAIL.
3. PROVIDE WITH FACTORY MOUNTED MOTOR OVERLOAD PANEL WHICH SHALL TAKE ONE FIELD VFD POWER INPUT AND DISTRIBUTE TO SUPPLY/EXHAUST FANS. EACH FAN SHALL BE PROTECTED BY INLINE FUSE BLOCK WITH FUSES. PANEL ENCLOSURE SHALL BE NEMA-1.
4. PREHEAT COIL PERFORMANCE CALCULATED AT MINIMUM CFM AND WITHOUT HEAT RECOVERY.
5. PROVIDE WITH DOOR HOLD OPEN LATCHES ON ALL ACCESS DOORS.
6. PROVIDE WITH PHASE FAILURE MONITOR AND BROWNOUT PROTECTION.
7. HEATING COIL PERFORMANCE DATA ENTERING AIR TEMPERATURES BASED ON 15°F DB / 14°F WB AMBIENT, 68°F DB / 54°F WB RETURN AIR TEMPERATURES, AND A FAILED ENERGY WHEEL CONDITION.
8. SUPPLY AND EXHAUST FAN INLET AIR FLOW MEASURING PIEZO RINGS PROVIDED BY AHU MANUFACTURER. FAN INLET AIR FLOW TRANSMITTERS AND OUTSIDE AIR FLOW STATIONS PROVIDED AND INSTALLED BY DDC CONTRACTOR.
9. COOLING COIL PERFORMANCE DATA BASED ON GROSS COIL CAPACITY. ENTERING AIR TEMPERATURES BASED ON 95°F DB / 78°F WB AMBIENT, 77°F DB / 66°F WB RETURN AIR TEMPERATURES, AND A FAILED ENERGY WHEEL CONDITION.
10. PROVIDE CONDENSATE DRAIN PAN OVERFLOW PROTECTION SWITCH. COORDINATE INTERLOCK AND SHUT DOWN REQUIREMENTS WITH AUTOMATIC TEMPERATURE CONTROLS CONTRACTOR.
11. PROVIDE WITH FACTORY-DIPPED POLYMER E-COATED EVAPORATOR, CONDENSER, AND REHEAT COILS.
12. COORDINATE WITH AUTOMATIC TEMPERATURE CONTROLS CONTRACTOR AND ON DRAWING SEQUENCES OF OPERATIONS FOR ALL REQUIRED CONTROL POINTS.
13. PROVIDE WITH BIPOLAR IONIZATION AIR PURIFICATION SYSTEM. REFER TO SPECIFICATION 230500 FOR REQUIREMENTS. A 24 VOLT STEP DOWN TRANSFORMER SHALL BE PROVIDED BY THE EQUIPMENT MANUFACTURER.
14. OA AND EXHAUST CFM VALUES DO NOT INCLUDE CFM FOR PURGE.
15. VARIABLE AIR VOLUME UNIT. PROVIDE WITH NON-POWERED RECEPTACLE.
16. CONSTANT VOLUME UNIT. PROVIDE WITH NON-POWERED RECEPTACLE.

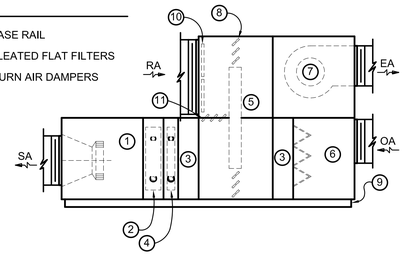
HEAT RECOVERY AIR HANDLING UNIT SCHEDULE (CONTINUED)

COOLING COIL PERFORMANCE					HOT WATER REHEAT COIL PERFORMANCE								UNIT WEIGHT (LBS)	SELECTION BASED ON "YORK"	REMARKS
APD IN.	GPM	E.W.T. °F	L.W.T. °F	WPD FT	MIN. COIL F.A.(SF)	E.A.T. °F	L.A.T. °F	CAPACITY MBH	GPM	MAX. WPD FT	MAX. APD IN.	E.W.T. °F			
0.96	98.5	42.0	56.0	14.3	-	-	-	-	-	-	-	-	9522	XTI-66x102	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 18 19
1.08	100.5	42.0	55.9	13.4	-	-	-	-	-	-	-	-	9984	XTI-69x99	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 18 19
1.03	24.0	42.0	55.9	7.8	-	-	-	-	-	-	-	-	4096	XTI-36x54	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 19
0.63	44.0	42.0	56.0	11.5	16.1	55.0	90.5	251	17.0	2.2	0.17	140	6134	XTI-48x72	1 2 3 4 5 6 7 8 9 10 11 12 13 14 16 17 19

17. UNIT IS HIGH OCCUPANCY ONLY. UNIT SHALL BE INDEXED ON WHEN CO2 LEVELS RISE ABOVE SETPOINT.
18. PROVIDE UNIT WITH 65 KAIC SCCR.
19. UNIT SHALL BE OF MODULAR CONSTRUCTION AND SHIPPED IN SECTIONS THAT CAN FIT THROUGH A STANDARD 6'0" DOORWAY. UNITS SHALL BE FIELD ASSEMBLED. ASSEMBLY SHALL BE MONITORED BY A FACTORY TRAINED TECHNICIAN AND SHALL MEET ALL FACTORY CONSTRUCTION STANDARDS ONCE ASSEMBLED. UNITS SHALL BE LEAK TESTED AND SHALL MEET FACTORY LEAKAGE STANDARDS.

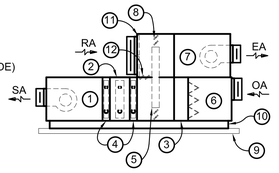
AHU-1 AND 2 COMPONENTS

1. SUPPLY FAN MODULE ("Q" FAN)
2. CHILLED WATER COIL MODULE
3. ACCESS MODULE
4. HOT WATER COIL MODULE
5. ENTHALPY (HEAT RECOVERY) WHEEL
6. FILTER BOX WITH 2" FILTERS
7. EXHAUST FAN MODULE
8. BYPASS DAMPERS (ECONOMIZER MODE)
9. 8" BASE RAIL
10. 2" PLEATED FLAT FILTERS
11. RETURN AIR DAMPERS



AHU-6 AND 8 COMPONENTS

1. SUPPLY FAN MODULE
2. CHILLED WATER COIL MODULE
3. ACCESS MODULE
4. HOT WATER COIL MODULE (REHEAT AHU-8 ONLY)
5. ENTHALPY (HEAT RECOVERY) WHEEL
6. FILTER BOX WITH 2" FILTERS
7. EXHAUST FAN MODULE
8. BYPASS DAMPERS (ECONOMIZER MODE)
9. CONCRETE HOUSEKEEPING PAD
10. 6" BASE RAIL
11. 2" PLEATED FLAT FILTERS
12. RETURN AIR DAMPERS



HEAT RECOVERY ROOFTOP AIR HANDLING UNIT SCHEDULE

UNIT NO.	TOTAL CFM	ENERGY WHEEL SUPPLY AIR DATA							ENERGY WHEEL RETURN AIR DATA							ENERGY WHEEL MOTOR DATA					FAN DATA												HOT WATER PREHEAT COIL PERFORMANCE								COOLING COIL PERFORMANCE								
		COOLING				HEATING			EXH. CFM	COOLING			HEATING			V	PH	HP	MCA	MOCP	SUPPLY						EXHAUST						ELEC.		MIN. COIL F.A.(SF)	CAPACITY MBH	E.A.T. °F	L.A.T. °F	MAX. APD IN	GPM	E.W.T. °F	L.W.T. °F	MAX. WPD FT.	MIN. COIL F.A.(SF)	CAPACITY		EAT		L.A.T. °F	APD IN.	GPM	E.W.T. °F	L.W.T. °F	WPD FT	
		OA CFM	E.A.T. °F DB/°F WB	L.A.T. °F DB/°F WB	APD	E.A.T. °F DB/°F WB	L.A.T. °F DB/°F WB	APD		E.A.T. °F DB/°F WB	L.A.T. °F DB/°F WB	APD	E.A.T. °F DB/°F WB	L.A.T. °F DB/°F WB	APD						CFM	E.S.P. IN	HP	FAN RPM	MCA	MOCP	CFM	E.S.P. IN	HP	FAN RPM	MCA	MOCP	V	PH										TOTAL MBH	SENS MBH	(°F) DB	(°F) WB	DB/°F WB					
RAHU-3	5000	5000	95.0 / 78.0	81.2 / 68.4	0.65	15.0 / 14.0	50.27 / 42.65	0.65	5000	75.0 / 62.5	86.6 / 75.5	0.66	68.0 / 54.0	32.8 / 28.9	0.66	460	3	0.17	0.4	1.0	5000	1.0	5.0	1704	8.3	12.0	5000	0.5	5.0	1747	8.3	12.0	460	3	13.6	223	15.0	55.1	0.11	15.0	140	110	1.8	13.6	200	130	81.0	68.0	54.9 / 53.7	0.33	28.5	42.0	56.1	15.5

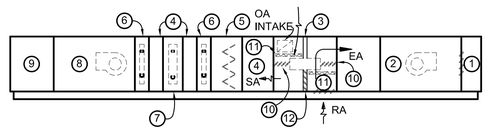
REMARKS:

1. PROVIDE WITH UNIT MOUNTED VARIABLE FREQUENCY DRIVE.
2. UNIT DIMENSIONS CUSTOMIZED TO FIT EXISTING ROOF CURB.
3. PROVIDE WITH FACTORY MOUNTED MOTOR OVERLOAD PANEL WHICH SHALL TAKE ONE FIELD VFD POWER INPUT AND DISTRIBUTE TO SUPPLY/EXHAUST FANS. EACH FAN SHALL BE PROTECTED BY INLINE FUSE BLOCK WITH FUSES. PANEL ENCLOSURE SHALL BE NEMA-1.
4. PREHEAT COIL PERFORMANCE CALCULATED AT MINIMUM CFM AND WITHOUT HEAT RECOVERY.
5. PROVIDE WITH DOOR HOLD OPEN LATCHES ON ALL ACCESS DOORS.
6. PROVIDE WITH PHASE FAILURE MONITOR AND BROWNOUT PROTECTION.
7. HEATING COIL PERFORMANCE DATA ENTERING AIR TEMPERATURES BASED ON 15°F DB / 14°F WB AMBIENT, 68°F DB / 54°F WB RETURN AIR TEMPERATURES, AND A FAILED ENERGY WHEEL CONDITION.
8. SUPPLY AND EXHAUST FAN INLET AIR FLOW MEASURING PIEZO RINGS PROVIDED BY AHU MANUFACTURER. FAN INLET AIR FLOW TRANSMITTERS AND OUTSIDE AIR FLOW STATIONS PROVIDED AND INSTALLED BY DDC CONTRACTOR.
9. COOLING COIL PERFORMANCE DATA BASED ON GROSS COIL CAPACITY. ENTERING AIR TEMPERATURES BASED ON 95°F DB / 78°F WB AMBIENT, 77°F DB / 66°F WB RETURN AIR TEMPERATURES, AND A FAILED ENERGY WHEEL CONDITION.
10. PROVIDE CONDENSATE DRAIN PAN OVERFLOW PROTECTION SWITCH. COORDINATE INTERLOCK AND SHUT DOWN REQUIREMENTS WITH AUTOMATIC TEMPERATURE CONTROLS CONTRACTOR.
11. PROVIDE WITH FACTORY-DIPPED POLYMER E-COATED EVAPORATOR, CONDENSER, AND REHEAT COILS.
12. COORDINATE WITH AUTOMATIC TEMPERATURE CONTROLS CONTRACTOR AND ON DRAWING SEQUENCES OF OPERATIONS FOR ALL REQUIRED CONTROL POINTS.
13. PROVIDE WITH BIPOLAR IONIZATION AIR PURIFICATION SYSTEM. REFER TO SPECIFICATION 230500 FOR REQUIREMENTS. A 24 VOLT STEP DOWN TRANSFORMER SHALL BE PROVIDED BY THE EQUIPMENT MANUFACTURER.
14. OA AND EXHAUST CFM VALUES DO NOT INCLUDE CFM FOR PURGE.
15. CONSTANT VOLUME UNIT. PROVIDE WITH NON-POWERED RECEPTACLE.

HOT WATER REHEAT COIL PERFORMANCE								UNIT WEIGHT (LBS)	SELECTION BASED ON "YORK"	REMARKS
←	MIN. COIL F.A.(SF)	E.A.T. °F	L.A.T. °F	CAPACITY MBH	GPM	MAX. WPD FT	MAX. APD IN.	E.W.T. °F			
←	13.6	55.0	90.2	181	12.5	2.1	0.12	140	7208	XTO-48x63	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

RAHU-3 COMPONENTS

1. EXHAUST DAMPERS
2. EXHAUST FAN MODULE
3. ENTHALPY (HEAT RECOVERY) WHEEL
4. ACCESS MODULE
5. ANGLED FILTERS MODULE
6. HOT WATER COIL MODULE
7. CHILLED WATER COIL MODULE
8. SUPPLY FAN MODULE
9. DISCHARGE PLENUM
10. BYPASS DAMPERS (ECONOMIZER MODE)
11. 2" PLEATED FLAT FILTERS
12. RECIRCULATION DAMPERS



ENERGY RECOVERY UNIT SCHEDULE

UNIT NO.	TOTAL CFM	ENERGY WHEEL SUPPLY AIR DATA								ENERGY WHEEL EXHAUST AIR DATA					FAN DATA								HOT WATER HEATING COIL PERFORMANCE								COOLING COIL PERFORMANCE										ELECTRICAL REQUIREMENTS			BASED ON SELECTION "AAON"	UNIT WEIGHT (LBS)	REMARKS
		COOLING					HEATING			EXH. CFM	COOLING		HEATING		SUPPLY				EXHAUST				MIN. COIL F.A.(SF)	CAPACITY MBH	E.A.T. °F	L.A.T. °F	MAX. APD IN	GPM	E.W.T. °F	L.W.T. °F	MAX. WPD IN	MIN. COIL F.A.(SF)	CAPACITY		E.A.T. °F DB/°F WB	L.A.T. °F DB/°F WB	APD IN.	GPM	E.W.T. °F	L.W.T. °F	WPD FT	V	PH	MCA			
		SUPPLY CFM	E.A.T. °F DB/ °F WB	L.A.T. °F DB/ °F WB	APD	E.A.T. °F DB/ °F WB	L.A.T. °F DB/ °F WB	APD		E.A.T. °F DB/% RH	APD	E.A.T. °F DB/% RH	APD	CFM	E.S.P. IN	H.P.	FAN RPM	CFM	E.S.P. IN	H.P.	FAN RPM													TOTAL MBH	SENS MBH											
ERU-1	1000	1000	95.0 / 78.0	80.9 / 69.1	0.8	15.0 / 14.0	55.4 / 46.1	0.8	1000	90.8 / 75.4	1.0	27.0 / 25.6	1.0	1000	0.45	1.0	2207	1000	0.55	1.34	1694	2.1	38.7	56.0	90.9	0.17	3.0	140	110	1.7	2.1	46.4	28.6	80.8 / 69.0	53.7 / 53.4	0.8	6.0	42	57.4	11.33	460	3	3.0	V3-ARB	1154	1 2 3 4 5 6 7 8 9 10 11

REMARKS:

1. PROVIDE WITH SINGLE POINT POWER CONNECTION, NON-POWERED RECEPTACLE, AND UNIT MOUNTED VARIABLE FREQUENCY DRIVE.
2. PROVIDE WITH FACTORY MOUNTED MOTOR OVERLOAD PANEL WHICH SHALL TAKE ONE FIELD VFD POWER INPUT AND DISTRIBUTE TO SUPPLY/EXHAUST FANS. EACH FAN SHALL BE PROTECTED BY INLINE FUSE BLOCK WITH FUSES. PANEL ENCLOSURE SHALL BE NEMA-1.
3. PROVIDE WITH DOOR HOLD OPEN LATCHES ON ALL ACCESS DOORS AND A BASE RAIL WITH NEOPRENE ISOLATORS.
4. HEATING COIL PERFORMANCE DATA ENTERING AIR TEMPERATURES BASED ON 15°F DB / 14°F WB AMBIENT, 68°F DB / 54°F WB RETURN AIR TEMPERATURES, AND A FAILED ENERGY WHEEL CONDITION.
5. SUPPLY AND EXHAUST FAN INLET AIR FLOW MEASURING PIEZO RINGS PROVIDED BY AHU MANUFACTURER. FAN INLET AIR FLOW TRANSMITTERS AND OUTSIDE AIR FLOW STATIONS PROVIDED AND INSTALLED BY DDC CONTRACTOR.
6. COOLING COIL PERFORMANCE DATA BASED ON GROSS COIL CAPACITY. ENTERING AIR TEMPERATURES BASED ON 95°F DB / 78°F WB AMBIENT, 77°F DB / 66°F WB RETURN AIR TEMPERATURES, AND A FAILED ENERGY WHEEL CONDITION.
7. PROVIDE CONDENSATE DRAIN PAN OVERFLOW PROTECTION SWITCH. COORDINATE INTERLOCK AND SHUT DOWN REQUIREMENTS WITH AUTOMATIC TEMPERATURE CONTROLS CONTRACTOR.
8. PROVIDE WITH FACTORY-DIPPED POLYMER E-COATED EVAPORATOR, CONDENSER, AND REHEAT COILS.
9. COORDINATE WITH AUTOMATIC TEMPERATURE CONTROLS CONTRACTOR AND ON DRAWING SEQUENCES OF OPERATIONS FOR ALL REQUIRED CONTROL POINTS.
10. PROVIDE WITH BIPOLAR IONIZATION AIR PURIFICATION SYSTEM. REFER TO SPECIFICATION 230500 FOR REQUIREMENTS. A 24 VOLT STEP DOWN TRANSFORMER SHALL BE PROVIDED BY THE EQUIPMENT MANUFACTURER.
11. CONSTANT VOLUME UNIT. OA AND EXHAUST CFM VALUES DO NOT INCLUDE CFM FOR PURGE.

UNIT DIMENSION AND ALTERNATE MODEL SCHEDULE

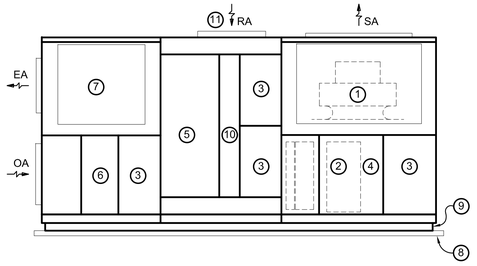
UNIT NO.	HEIGHT (IN)	WIDTH (IN)	LENGTH (IN)	"TRANE" ALTERNATE MODEL NUMBER	REMARKS
AHU-1	132	102	225.25	CSAA035	1 3 4
AHU-2	138	99	237.25	CSAA035	1 3 4
AHU-6	72	54	180.25	CSAA010	1 3 4
AHU-7	42	63	121	CSAA012	1 3 4
AHU-8	96	72	198.25	CSAA017	1 3 4
RAHU-3	48	63	447	CSAA012	2 3 4
RAHU-4	33	66	221	CSAA004	2 3 4
ERU-1	43.125	31.25	82.5	CSAA004	1 3 4

REMARKS:

1. UNIT DIMENSIONS ARE RESTRICTED BY INTERIOR SPACE AVAILABILITY INCLUDING ROOF STRUCTURE AND DUCTWORK ELEVATION.
2. UNIT DIMENSIONS ARE RESTRICTED BY EXISTING UNIT CURB. UNITS REQUIRING DIFFERENT CURB DIMENSIONS SHALL REQUIRE CURB ADAPTER. IF ADAPTER CURB IS REQUIRED AND RAISES UNIT 30" OR HIGHER ABOVE THE ROOF SURFACE, CONTRACTOR SHALL PROVIDE INTEGRAL SERVICE PLATFORM WITH SAFETY RAILS AS MANUFACTURED BY MGM PRODUCTS OR APPROVED EQUAL.
3. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND SPACE AVAILABLE PRIOR TO ORDERING UNITS.
4. UNIT HEIGHTS DO NOT INCLUDE BASE RAIL AND WIDTHS DO NOT INCLUDE ANY UNIT MOUNTED VFD'S, PIPE CABINETS, OR OPEN ACCESS DOOR.

ERU-1 COMPONENTS

1. SUPPLY FAN MODULE
2. CHILLED WATER COIL MODULE
3. ACCESS MODULE
4. HOT WATER COIL MODULE
5. ENTHALPY (HEAT RECOVERY) WHEEL
6. FILTER BOX WITH 2" FILTERS
7. EXHAUST FAN MODULE
8. CONCRETE HOUSEKEEPING PAD
9. 6" BASE RAIL
10. 2" PLEATED FLAT FILTERS
11. RETURN AIR DAMPERS



COMMONWEALTH OF VIRGINIA
KEVIN D. ALLEN
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TELEPHONE: (757) 599-6433 PROJECT NUMBER: 21-156

HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
MECHANICAL SCHEDULES

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: SLS
CHECKED BY: KDA

M0.4

DATE: 12/20/2024

AHU-1 VENTILATION CALCULATION

Based on VMC 2018 - 403

System Area	As	sqft	18856.86	Condition Analyzed		Heating
System Population	Ps	people	371.00	Method to determine Ev		Appendix A
Sum of Zone Population	sum of Pz	people	371.00	Minimum Evz		0.78
Occupant Diversity	D		1.00	Critical Zone		1.25 - B32 - CLASSROOM
Uncorrected outdoor air intake	Vou	cfm	5221.14	System Ventilation Efficiency		0.78
System primary airflow	Vps	cfm	16090.00	Outdoor air intake flow required		6722
Average outdoor air fraction	Xs		0.32	Outdoor air intake flow provided		6780

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
Zone Number	Zone Name	Occupancy Category	Area	Default Population	Zone Population	People Outdoor Air Rate	Area Outdoor Air Rate	Occupancy Breathing Zone Airflow	Area Breathing Zone Airflow	Breathing Zone Airflow	Zone Air Distribution Effectiveness	Zone Outdoor Airflow	Zone Discharge Airflow	Zone Primary Airflow	Primary Outdoor Air Fraction	Zone Secondary Recirculation Fraction	Zone Primary Air Fraction	Supply Air Fraction	Mixed Air Fraction	Outdoor Air Fraction	Zone Ventilation Efficiency
			Az sqft	Yes/No	Pz people	Rp cfm/person	Ra cfm/sqft	Pz * Rp cfm	Az * Ra cfm	Vbz cfm	Ez	Voz cfm	Vdz cfm	Vpz cfm	Zpz	Er	Ep	Fa	Ep	Fc	Evz
1.01	B33 - CORRIDOR	Corridors	692.25	Yes	0.0	0	0.06	0.00	41.54	41.54	0.8	51.92	375	260	0.20	1.00	0.69	1.00	0.69	1.00	1.08
1.01	1/4 OF A37 - CORRIDOR	Corridors	93.83	Yes	0.0	0	0.06	0.00	5.63	5.63	0.8	7.04	25	15	0.47	1.00	0.60	1.00	0.60	1.00	0.91
1.02	A38 - ART	Art Classroom	682.42	Yes	14.0	10	0.18	140.00	122.84	262.84	0.8	328.54	775	535	0.61	1.00	0.69	1.00	0.69	1.00	0.80
1.02	A39 - STORAGE	Storage	103.95	Yes	0.0	0	0.12	0.00	12.47	12.47	0.8	15.59	50	35	0.45	1.00	0.70	1.00	0.70	1.00	0.91
1.02	A40 - KILN	Storage	68.99	Yes	0.0	0	0.12	0.00	8.28	8.28	0.8	10.35	100	70	0.15	1.00	0.70	1.00	0.70	1.00	1.12
1.02	1/4 OF A37 - CORRIDOR	Corridors	93.83	Yes	0.0	0	0.06	0.00	5.63	5.63	0.8	7.04	25	20	0.35	1.00	0.80	1.00	0.80	1.00	0.98
1.03	A36 - CONFERENCE	Conference	313.08	Yes	16.0	5	0.06	80.00	18.78	98.78	0.8	123.48	345	240	0.51	1.00	0.70	1.00	0.69	1.00	0.87
1.03	A35 - GIRL'S RESTROOM	Corridors	347.62	Yes	0.0	0	0.06	0.00	20.86	20.86	0.8	26.07	250	170	0.15	1.00	0.68	1.00	0.68	1.00	1.12
1.03	1/4 OF A37 - CORRIDOR	Corridors	93.83	Yes	0.0	0	0.06	0.00	5.63	5.63	0.8	7.04	25	15	0.47	1.00	0.60	1.00	0.60	1.00	0.91
1.04	A41 - RESOURCE	Classroom 9+	455.95	Yes	16.0	10	0.12	160.00	54.71	214.71	0.8	268.39	1015	700	0.38	1.00	0.69	1.00	0.68	1.00	0.96
1.04	1/4 OF A37 - CORRIDOR	Corridors	93.83	Yes	0.0	0	0.06	0.00	5.63	5.63	0.8	7.04	25	15	0.47	1.00	0.60	1.00	0.60	1.00	0.91
1.05	A42 - CORRIDOR	Corridors	382.09	Yes	0.0	0	0.06	0.00	22.93	22.93	0.8	28.66	550	380	0.08	1.00	0.69	1.00	0.69	1.00	1.17
1.06	HALF OF A53 - LIVING SKILLS	Classroom 9+	662	Yes	24.0	10	0.12	240.00	79.44	319.44	0.8	399.30	1220	840	0.48	1.00	0.69	1.00	0.68	1.00	0.89
1.07	HALF OF A53 - LIVING SKILLS	Classroom 9+	662	Yes	24.0	10	0.12	240.00	79.44	319.44	0.8	399.30	1220	840	0.48	1.00	0.69	1.00	0.68	1.00	0.89
1.08	A55 - CORRIDOR	Corridors	1579	Yes	0.0	0	0.06	0.00	94.74	94.74	0.8	118.43	275	193	0.61	1.00	0.70	1.00	0.70	1.00	0.80
1.08	A29 - CUSTODIAN	Office	57.8	Yes	1.0	5	0.06	5.00	3.47	8.47	0.8	10.59	25	17	0.62	1.00	0.68	1.00	0.68	1.00	0.80
1.08	A02 - CORRIDOR/ENTRY	Main Entry Lobby	199.04	Yes	2.0	5	0.06	10.00	11.94	21.94	0.8	27.43	400	275	0.10	1.00	0.69	1.00	0.68	1.00	1.15
1.08	A23+A13 - CORRIDOR	Corridors	456.77	Yes	0.0	0	0.06	0.00	27.41	27.41	0.8	34.26	300	205	0.17	1.00	0.68	1.00	0.68	1.00	1.10
1.09	A54 - READING	Classroom 9+	180.79	Yes	7.0	10	0.12	70.00	21.69	91.69	0.8	114.62	270	185	0.62	1.00	0.69	1.00	0.68	1.00	0.79
1.10	A03 - RECEPTION	Reception	185.98	Yes	6.0	5	0.06	30.00	11.16	41.16	0.8	51.45	320	220	0.23	1.00	0.69	1.00	0.68	1.00	1.06
1.10	A04 - ADMIN	Office	311.27	Yes	2.0	5	0.06	10.00	18.68	28.68	0.8	35.85	520	360	0.10	1.00	0.69	1.00	0.69	1.00	1.15
1.10	A11 - TOILET	Corridors	45	Yes	0.0	0	0.06	0.00	2.70	2.70	0.8	3.38	75	50	0.07	1.00	0.67	1.00	0.66	1.00	1.16
1.10	A07+A09 - CORRIDOR	Corridors	252.66	Yes	0.0	0	0.06	0.00	15.16	15.16	0.8	18.95	325	225	0.08	1.00	0.69	1.00	0.69	1.00	1.17
1.11	A05 - MAIL	Corridors	75.03	Yes	0.0	0	0.06	0.00	4.50	4.50	0.8	5.63	50	30	0.19	1.00	0.60	1.00	0.60	1.00	1.08
1.11	A06 - VALUT	Vault	72.45	Yes	1.0	5	0.06	5.00	4.35	9.35	0.8	11.68	40	25	0.47	1.00	0.63	1.00	0.62	1.00	0.90
1.11	A08 - CONFERENCE	Conference	192.66	Yes	10.0	5	0.06	50.00	11.56	61.56	0.8	76.95	250	170	0.45	1.00	0.68	1.00	0.68	1.00	0.91
1.12	A13 - PRINCIPAL	Office	279.68	Yes	2.0	5	0.06	10.00	16.78	26.78	0.8	33.48	350	245	0.14	1.00	0.70	1.00	0.70	1.00	1.13
1.12	A12 - CLOSET	Storage	11	Yes	0.0	0	0.12	0.00	1.32	1.32	0.8	1.65	5	3	0.55	1.00	0.60	1.00	0.60	1.00	0.86
1.12	A10 - RESTROOM	Corridors	43.02	Yes	0.0	0	0.06	0.00	2.58	2.58	0.8	3.23	25	17	0.19	1.00	0.68	1.00	0.68	1.00	1.09
1.13	A18 - ITENERATE	Office	77.74	Yes	1.0	5	0.06	5.00	4.66	9.66	0.8	12.08	290	200	0.06	1.00	0.69	1.00	0.68	1.00	1.18
1.13	A17.2 - EXAM/REST	Office	89.05	Yes	1.0	5	0.06	5.00	5.34	10.34	0.8	12.93	290	200	0.06	1.00	0.69	1.00	0.68	1.00	1.18
1.14	A26 - TECHNOLOGY ED.	Computer Lab	901.72	Yes	23.0	10	0.12	230.00	108.21	338.21	0.8	422.76	1050	725	0.58	1.00	0.69	1.00	0.69	1.00	0.82
1.15	A19 - CLINIC LOBBY	Main Entry Lobby	68.41	Yes	1.0	5	0.06	5.00	4.10	9.10	0.8	11.38	50	30	0.38	1.00	0.60	1.00	0.60	1.00	0.96
1.15	A17.1 - CLINIC	Office	101.85	Yes	1.0	5	0.06	5.00	6.11	11.11	0.8	13.89	70	43	0.32	1.00	0.61	1.00	0.61	1.00	1.00
1.15	A15 - OFFICE	Office	74.88	Yes	1.0	5	0.06	5.00	4.49	9.49	0.8	11.87	85	55	0.22	1.00	0.65	1.00	0.64	1.00	1.06
1.15	A16 - TOILET	Corridors	54	Yes	0.0	0	0.06	0.00	3.24	3.24	0.8	4.05	10	7	0.58	1.00	0.70	1.00	0.70	1.00	0.82
1.15	A20.1 - GUIDANCE	Office	117.65	Yes	1.0	5	0.06	5.00	7.06	12.06	0.8	15.07	175	120	0.13	1.00	0.69	1.00	0.68	1.00	1.13
1.15	A20.2 - STORAGE	Storage	41.18	Yes	0.0	0	0.12	0.00	4.94	4.94	0.8	6.18	15	10	0.62	1.00	0.67	1.00	0.66	1.00	0.80
1.16	A21 - 6TH GRADE MATH	Classroom 9+	654.34	Yes	23.0	10	0.12	230.00	78.52	308.52	0.8	385.65	1080	745	0.52	1.00	0.69	1.00	0.68	1.00	0.86
1.17	A25 - STORAGE	Storage	304.89	Yes	0.0	0	0.12	0.00	36.59	36.59	0.8	45.73	370	255	0.18	1.00	0.69	1.00	0.68	1.00	1.09
1.17	A30 - BOY'S RESTROOM	Corridors	319.37	Yes	0.0	0	0.06	0.00	19.16	19.16	0.8	23.95	250	170	0.14	1.00	0.68	1.00	0.68	1.00	1.12
1.18	A24 - 6TH GRADE RESOURCE	Breakout Room	526.08	Yes	16.0	7.5	0.06	120.00	31.56	151.56	0.8	189.46	1120	770	0.25	1.00	0.69	1.00	0.68	1.00	1.05
1.19	A22 - STORAGE	Storage	249.12	Yes	0.0	0	0.12	0.00	29.89	29.89	0.8	37.37	180	125	0.30	1.00	0.69	1.00	0.69	1.00	1.01
1.20	B01 - 6TH GRADE CLASSROOI	Classroom 9+	635.93	Yes	23.0	10	0.12	230.00	76.31	306.31	0.8	382.89	1080	745	0.51	1.00	0.69	1.00	0.68	1.00	0.87
1.21	B02 - 6TH GRADE CLASSROOI	Classroom 9+	635.18	Yes	23.0	10	0.12	230.00	76.22	306.22	0.8	382.78	1180	810	0.47	1.00	0.69	1.00	0.68	1.00	0.89
1.22	B05 - 6TH GRADE CLASSROOI	Classroom 9+	637.43	Yes	23.0	10	0.12	230.00	76.49	306.49	0.8	383.11	1120	770	0.50	1.00	0.69	1.00	0.68	1.00	0.87
1.23	B03 - 6TH GRADE CLASSROOI	Classroom 9+	635.93	Yes	23.0	10	0.12	230.00	76.31	306.31	0.8	382.89	1180	810	0.47	1.00	0.69	1.00	0.68	1.00	0.89
1.24	B04 - CORRIDOR	Corridors	673.37	Yes	0.0	0	0.06	0.00	40.40	40.40	0.8	50.50	450	310	0.16	1.00	0.69	1.00	0.68	1.00	1.11
1.25	B32 - CLASSROOM	Classroom 9+	664.7	Yes	24.0	10	0.12	240.00	79.76	319.76	0.8	399.71	900	620	0.64	1.00	0.69	1.00	0.68	1.00	0.78
1.26	B29 - CORRIDOR	Corridors	747.28	Yes	0.0	0	0.06	0.00	44.84	44.84	0.8	56.05	300	205	0.27	1.00	0.68	1.00	0.68	1.00	1.03
1.27	B31 - 6TH GRADE SCIENCE	Classroom 9+	876.49	Yes	31.0	10	0.12	310.00	105.18	415.18	0.8	518.97	1320	910	0.57	1.00	0.69	1.00	0.68	1.00	0.82
1.28	B30 - 6TH GRADE SCIENCE	Classroom 9+	878.54	Yes	31.0	10	0.12	310.00	105.42	415.42	0.8	519.28	1320	910	0.57	1.00	0.69	1.00	0.68	1.00	0.82
1.37	A32 - SCIENCE PREP/STORAG	Storage	203.91	Yes	0.0	0	0.12	0.00	24.47	24.47	0.8	30.59	280	190	0.16	1.00	0.68	1.00	0.67	1.00	1.11

AHU-1 VENTILATION CALCULATION

COMMONWEALTH OF VIRGINIA
KEVIN D. ALLEN
Lic. No. 023349
12/20/2024
PROFESSIONAL ENGINEER

THOMPSON
Consulting Engineers
22 ENTERPRISE PARKWAY HAMPTON, VA 23666
TELEPHONE: (757) 599-6455 PROJECT NUMBER: 21-156

HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS
VIRGINIA
VENTILATION CALCULATIONS

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: SLS
CHECKED BY: KDA

M0.5

DATE: 12/20/2024

System Area	As	sqft	15716.52	Condition Analyzed	Heating		
System Population	Ps	people	345.00	Method to determine Ev	Appendix A		
Sum of Zone Population	sum of Pz	people	345.00	Minimum Evz	0.82		
Occupant Diversity	D		1.00	Critical Zone	F OF 217 - MEDIA CENTER		
Uncorrected outdoor air intake	Vou	cfm	4825.03	System Ventilation Efficiency	0.82		
System primary airflow	Vps	cfm	16500.00	Outdoor air intake flow required	5859		
Average outdoor air fraction	Xs		0.29	Outdoor air intake flow provided	5880	21335	77.3%

AHU-2 VENTILATION CALCULATION

Based on VMC 2018 - 403

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
Zone Number	Zone Name	Occupancy Category	Area	Default Population	Zone Population	People Outdoor Air Rate	Area Outdoor Air Rate	Occupancy Breathing Zone Airflow	Area Breathing Zone Airflow	Breathing Zone Airflow	Zone Air Distribution Effectiveness	Zone Outdoor Airflow	Zone Discharge Airflow	Zone Primary Airflow	Primary Outdoor Air Fraction	Zone Secondary Recirculation Fraction	Zone Primary Air Fraction	Supply Air Fraction	Mixed Air Fraction	Outdoor Air Fraction	Zone Ventilation Efficiency
			Az sqft	Yes/No	Pz people	Rp cfm/person	Ra cfm/sqft	Pz * Rp cfm	Az * Ra cfm	Vbz cfm	Ez	Voz cfm	Vdz cfm	Vpz cfm	Zpz	Er	Ep	Fa	Ep	Fc	Evz
2.02	205 - 8TH GRADE CLASSROOM	Classroom 9+	634.67	Yes	23.0	10	0.12	230.00	76.16	306.16	0.8	382.70	1240	960	0.40	1.00	0.77	1.00	0.77	1.00	0.91
2.03	211 - 8TH GRADE CLASSROOM	Classroom 9+	641.3	Yes	23.0	10	0.12	230.00	76.96	306.96	0.8	383.70	1240	960	0.40	1.00	0.77	1.00	0.77	1.00	0.91
2.04	204 - 8TH GRADE CLASSROOM	Classroom 9+	641.2	Yes	23.0	10	0.12	230.00	76.94	306.94	0.8	383.68	1220	945	0.41	1.00	0.77	1.00	0.77	1.00	0.91
2.05	212 - 8TH GRADE CLASSROOM	Classroom 9+	646.6	Yes	23.0	10	0.12	230.00	77.59	307.59	0.8	384.49	1240	960	0.40	1.00	0.77	1.00	0.77	1.00	0.91
2.06	213 - CORRIDOR	Corridor	1221.26	Yes	0.0	0	0.06	0.00	73.28	73.28	0.8	91.59	450	345	0.27	1.00	0.77	1.00	0.76	1.00	1.01
2.07	203 - CONFERENCE	Conference Room	245.55	Yes	13.0	5	0.06	65.00	14.73	79.73	0.8	99.67	295	225	0.44	1.00	0.76	1.00	0.76	1.00	0.88
2.08	202 - 8TH GRADE CLASSROOM	Classroom 9+	656.03	Yes	23.0	10	0.12	230.00	78.72	308.72	0.8	385.90	1220	945	0.41	1.00	0.77	1.00	0.77	1.00	0.91
2.09	201 - RESOURCE	Breakout Room	677.87	Yes	21.0	7.5	0.06	157.50	40.67	198.17	0.8	247.72	1180	905	0.27	1.00	0.77	1.00	0.76	1.00	1.01
2.10	234 - CLASSROOM	Classroom 9+	652.19	Yes	23.0	10	0.12	230.00	78.26	308.26	0.8	385.33	1680	1300	0.30	1.00	0.77	1.00	0.77	1.00	0.99
2.11	233 - 7TH GRADE CLASSROOM	Classroom 9+	674.34	Yes	24.0	10	0.12	240.00	80.92	320.92	0.8	401.15	1350	1045	0.38	1.00	0.77	1.00	0.77	1.00	0.93
2.12	231 - CORRIDOR	Corridor	1126.34	Yes	0.0	0	0.06	0.00	67.58	67.58	0.8	84.48	300	230	0.37	1.00	0.77	1.00	0.76	1.00	0.94
2.13	232 - 7TH GRADE CLASSROOM	Classroom 9+	683.02	Yes	24.0	10	0.12	240.00	81.96	321.96	0.8	402.45	1350	1040	0.39	1.00	0.77	1.00	0.77	1.00	0.92
2.14	216 - TV STUDIO	Office	98.33	Yes	1.0	5	0.06	5.00	5.90	10.90	0.8	13.62	280	215	0.06	1.00	0.77	1.00	0.76	1.00	1.17
2.15	HALF OF 217 - MEDIA CENTER	Media Center	997.7	Yes	25.0	10	0.12	250.00	119.72	369.72	0.8	462.16	1140	900	0.51	1.00	0.79	1.00	0.78	1.00	0.82
2.16	230 - 7TH GRADE CLASSROOM	Classroom 9+	663.22	Yes	24.0	10	0.12	240.00	79.59	319.59	0.8	399.48	1350	1045	0.38	1.00	0.77	1.00	0.77	1.00	0.93
2.17	229 - 7TH GRADE CLASSROOM	Classroom 9+	663.41	Yes	24.0	10	0.12	240.00	79.61	319.61	0.8	399.51	1410	1090	0.37	1.00	0.77	1.00	0.77	1.00	0.94
2.18	224 - 8TH GRADE CLASSROOM	Classroom 9+	668.67	Yes	24.0	10	0.12	240.00	80.24	320.24	0.8	400.30	1240	960	0.42	1.00	0.77	1.00	0.77	1.00	0.90
2.19	223 - GIRL'S RESTROOM	Corridor	307.06	Yes	0.0	0	0.06	0.00	18.42	18.42	0.8	23.03	190	145	0.16	1.00	0.76	1.00	0.76	1.00	1.10
2.19	222 - BOY'S RESTROOM	Corridor	307.21	Yes	0.0	0	0.06	0.00	18.43	18.43	0.8	23.04	190	145	0.16	1.00	0.76	1.00	0.76	1.00	1.10
2.19	220 + 225 - CORRIDOR	Corridor	1079.82	Yes	0.0	0	0.06	0.00	64.79	64.79	0.8	80.99	860	670	0.12	1.00	0.78	1.00	0.77	1.00	1.13
2.20	HALF OF 217 - MEDIA CENTER	Media Center	997.7	Yes	25.0	10	0.12	250.00	119.72	369.72	0.8	462.16	1140	900	0.51	1.00	0.79	1.00	0.78	1.00	0.82
2.20	219 - AV STORAGE	Storage	188.93	Yes	0.0	0	0.12	0.00	22.67	22.67	0.8	28.34	105	70	0.40	1.00	0.67	1.00	0.66	1.00	0.92
2.20	218 - OFFICE	Office	219.86	Yes	2.0	5	0.06	10.00	13.19	23.19	0.8	28.99	105	70	0.41	1.00	0.67	1.00	0.66	1.00	0.92
2.22	236 - STAIRS	Corridor	517.34	Yes	0.0	0	0.06	0.00	31.04	31.04	0.8	38.80	280	215	0.18	1.00	0.77	1.00	0.76	1.00	1.08
2.23	227 - STAIR	Corridor	506.9	Yes	0.0	0	0.06	0.00	30.41	30.41	0.8	38.02	280	215	0.18	1.00	0.77	1.00	0.76	1.00	1.08

AHU-2 VENTILATION CALCULATION

RAHU-3 VENTILATION CALCULATION

Based on VMC 2018 - 403

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
System Number	System Name	Condition Analyzed	Occupancy Category	Area	Default Population	Zone Population	People Outdoor Air Rate	Area Outdoor Air Rate	Occupancy Breathing Zone Airflow	Area Breathing Zone Airflow	Breathing Zone Airflow	Zone Air Distribution Effectiveness	Zone Outdoor Airflow	Outdoor Air Intake Flow Provided
				Az sqft	Yes/No	Pz people	Rp cfm/person	Ra cfm/sqft	Pz * Rp cfm	Az * Ra cfm	Vbz cfm	Ez	Voz cfm	cfm
RAHU-3	A52 - DINNING	Heating	Cafeteria	2665.48	Yes	266.55	8	0.18	2132.38	479.79	2612.17	0.8	3265.21	5000

RAHU-3 VENTILATION CALCULATION

RAHU-4 VENTILATION CALCULATION

Based on VMC 2018 - 403

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
System Number	Room Name	Condition Analyzed	Occupancy Category	Area	Default Population	Zone Population	People Outdoor Air Rate	Area Outdoor Air Rate	Occupancy Breathing Zone Airflow	Area Breathing Zone Airflow	Breathing Zone Airflow	Zone Air Distribution Effectiveness	Zone Outdoor Airflow	Outdoor Air Intake Flow Provided
				Az sqft	Yes/No	Pz people	Rp cfm/person	Ra cfm/sqft	Pz * Rp cfm	Az * Ra cfm	Vbz cfm	Ez	Voz cfm	cfm
RAUH-4	A51 - KITCHEN	Heating	Office	1349.25	Yes	7.00	5	0.06	35.00	80.96	115.96	0.8	144.94	131.3
	A44 - KITCHEN	Heating	Office	120.23	Yes	1.00	5	0.06	5.00	7.21	12.21	0.8	15.27	11.9
	A46 - DISHWASHER	Heating	Office	117.33	Yes	1.00	5	0.06	5.00	7.04	12.04	0.8	15.05	23.9
	A49 - ENTRY	Heating	Receiving	76.26	Yes	0.00	0	0.12	0.00	9.15	9.15	0.8	11.44	23.9
	A50 - TOILET	Heating	Corridor	42.11	Yes	0.00	0	0.06	0.00	2.53	2.53	0.8	3.16	9.0
TOTAL				**1705.18**		**9.00**							**189.86**	**200.0**

RAHU-4 VENTILATION CALCULATION

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS
VIRGINIA
VENTILATION CALCULATIONS

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: SLS
CHECKED BY: KDA

M0.6

DATE: 12/20/2024

System Area	As	sqft	6233.46
System Population	Ps	people	84.00
Sum of Zone Population	sum of Pz	people	84.00
Occupant Diversity	D		1.00
Uncorrected outdoor air intake	Vou	cfm	1360.23
System primary airflow	Vps	cfm	3725.00
Average outdoor air fraction	Xs		0.36

Condition Analyzed	Heating
Method to determine Ev	Appendix A
Minimum Evz	0.75
Critical Zone	316 - 8TH GRADE SCIENCE
System Ventilation Efficiency	0.75
Outdoor air intake flow required	1818
Outdoor air intake flow provided	1830

AHU-6 VENTILATION CALCULATION

Based on VMC 2018 - 403

5980 62.3%

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
Zone Number	Zone Name	Occupancy Category	Area	Default Population	Zone Population	People Outdoor Air Rate	Area Outdoor Air Rate	Occupancy Breathing Zone Airflow	Area Breathing Zone Airflow	Breathing Zone Airflow	Zone Air Distribution Effectiveness	Zone Outdoor Airflow	Zone Discharge Airflow	Zone Primary Airflow	Primary Outdoor Air Fraction	Zone Secondary Recirculation Fraction	Zone Primary Air Fraction	Supply Air Fraction	Mixed Air Fraction	Outdoor Air Fraction	Zone Ventilation Efficiency
			Az sqft	Yes/No	Pz people	Rp cfm/person	Ra cfm/sqft	Pz * Rp cfm	Az * Ra cfm	Vbz cfm	Ez	Voz cfm	Vdz cfm	Vpz cfm	Zpz	Er	Ep	Fa	Ep	Fc	Evz
1.29	HALF OF B10 - CORRIDOR	Corridor	968.69	Yes	0.0	0	0.06	0.00	58.12	58.12	0.8	72.65	480	300	0.24	1.00	0.63	1.00	0.62	1.00	1.07
1.30	HALF OF B10 - CORRIDOR	Corridor	791.04	Yes	0.0	0	0.06	0.00	47.46	47.46	0.8	59.33	750	470	0.13	1.00	0.63	1.00	0.62	1.00	1.14
1.30	B09 - STORAGE	Storage	116.53	Yes	0.0	0	0.12	0.00	13.98	13.98	0.8	17.48	50	30	0.58	1.00	0.60	1.00	0.60	1.00	0.87
1.31	B16 - 8TH GRADE SCIENCE	Science Lab	1005.8	Yes	26.0	10	0.18	260.00	181.04	441.04	0.8	551.31	1160	725	0.76	1.00	0.63	1.00	0.62	1.00	0.75
1.32	B17 - PREP	Storage	110.83	Yes	0.0	0	0.12	0.00	13.30	13.30	0.8	16.62	150	95	0.17	1.00	0.63	1.00	0.63	1.00	1.12
1.33	B15 - BAND AND CHORUS	Music Room	1526.57	Yes	54.0	10	0.06	540.00	91.59	631.59	0.8	789.49	1920	1195	0.66	1.00	0.62	1.00	0.62	1.00	0.81
1.35	B13 - OFFICE	Office	250	Yes	2.0	5	0.06	10.00	15.00	25.00	0.8	31.25	310	190	0.16	1.00	0.61	1.00	0.61	1.00	1.12
1.36	B20 - CHAIR STORAGE	Storage	272.75	Yes	0.0	0	0.12	0.00	32.73	32.73	0.8	40.91	300	185	0.22	1.00	0.62	1.00	0.61	1.00	1.08
1.38	B12 - GIRL'S TOILET	Corridor	156.2	Yes	0.0	0	0.06	0.00	9.37	9.37	0.8	11.72	50	30	0.39	1.00	0.60	1.00	0.60	1.00	0.98
1.38	B11 - BOY'S TOILET	Corridor	155.48	Yes	0.0	0	0.06	0.00	9.33	9.33	0.8	11.66	50	30	0.39	1.00	0.60	1.00	0.60	1.00	0.98
1.38	B14 - STORAGE	Storage	258.67	Yes	0.0	0	0.12	0.00	31.04	31.04	0.8	38.80	180	115	0.34	1.00	0.64	1.00	0.63	1.00	1.01
2.01	207 - CORRIDOR	Corridor	334.77	Yes	0.0	0	0.06	0.00	20.09	20.09	0.8	25.11	260	160	0.16	1.00	0.62	1.00	0.61	1.00	1.12
2.01	208 - OFFICE	Office	226.33	Yes	2.0	5	0.06	10.00	13.58	23.58	0.8	29.47	260	160	0.18	1.00	0.62	1.00	0.61	1.00	1.11
2.01	209 - TOILET	Corridor	59.8	Yes	0.0	0	0.06	0.00	3.59	3.59	0.8	4.49	60	40	0.11	1.00	0.67	1.00	0.66	1.00	1.16

AHU-6 VENTILATION CALCULATION

AHU-7 VENTILATION CALCULATION

Based on VMC 2018 - 403

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
System Number	Room Name	Condition Analyzed	Occupancy Category	Area	Default Population	Zone Population	People Outdoor Air Rate	Area Outdoor Air Rate	Occupancy Breathing Zone Airflow	Area Breathing Zone Airflow	Breathing Zone Airflow	Zone Air Distribution Effectiveness	Zone Outdoor Airflow	Outdoor Air Intake Flow Provided
				Az sqft	Yes/No	Pz people	Rp cfm/person	Ra cfm/sqft	Pz * Rp cfm	Az * Ra cfm	Vbz cfm	Ez	Voz cfm	cfm
AHU-7	2/3 OF B23 - GYMNASIUM	Heating	Gymnasium	4725	Yes	0.00	0	0.3	0.00	1417.50	1417.50	0.8	1771.88	1820
	B22 - STORAGE	Heating	Storage	352.5	Yes	0.00	0	0.12	0.00	42.30	42.30	0.8	52.88	90
	B21 - STAGE	Heating	Stage	790.94	Yes	56.00	10	0.06	560.00	47.46	607.46	0.8	759.32	760
TOTAL				**5868.44**		**56.00**							**2584.08**	**2670**

AHU-7 VENTILATION CALCULATION

AHU-8 Ventilation Calculation

Based on VMC 2018 - 403

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
System Number	Room Name	Condition Analyzed	Occupancy Category	Area	Default Population	Zone Population	People Outdoor Air Rate	Area Outdoor Air Rate	Occupancy Breathing Zone Airflow	Area Breathing Zone Airflow	Breathing Zone Airflow	Zone Air Distribution Effectiveness	Zone Outdoor Airflow	Outdoor Air Intake Flow Provided
				Az sqft	Yes/No	Pz people	Rp cfm/person	Ra cfm/sqft	Pz * Rp cfm	Az * Ra cfm	Vbz cfm	Ez	Voz cfm	cfm
AHU-8	1/3 OF B23 - GYMNASIUM	Heating	Health club/aerobics	3367.84	No	260.00	20	0.06	5200.00	202.07	5402.07	0.8	6752.59	6900

*Note, Per VMC 2018 - 403, the Gymnasium Occupancy Category does not account for people when determining an outdoor air rate. AHU-8 is a unit intended for use during high occupancy situations and therefore the Occupancy Category and Zone Polulation have been modified to account for that situation.

AHU-8 VENTILATION CALCULATION

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS
VIRGINIA
VENTILATION CALCULATIONS

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: SLS
CHECKED BY: KDA

M0.7

DATE: 12/20/2024

ERU-1 VENTILATION CALCULATION

Based on VMC 2018 - 403

B	C	D	E	F	G	H	I	J	K	L	M	N	O
Room Name	Condition Analyzed	Occupancy Category	Area	Default Population	Zone Population	People Outdoor Air Rate	Area Outdoor Air Rate	Occupancy Breathing Zone Airflow	Area Breathing Zone Airflow	Breathing Zone Airflow	Zone Air Distribution Effectiveness	Zone Outdoor Airflow	Outdoor Air Intake Flow Provided
			Az sqft	Yes/No	Pz people	Rp cfm/person	Ra cfm/sqft	Pz * Rp cfm	Az * Ra cfm	Vbz cfm	Ez	Voz cfm	cfm
B24 - PE OFFICE	Heating	Office	76.56	Yes	1.00	5	0.06	5.00	4.59	9.59	0.8	11.99	100
B25.2 - BOY'S LOCKER	Heating	Team room	127.89	No	15.00	5	0.06	75.00	7.67	82.67	0.8	103.34	175
B25.1 - TOILET/SHOWER	Heating	Corridor	324.21	Yes	0.00	0	0.06	0.00	19.45	19.45	0.8	24.32	225
B26 - TOILET/SHOWER	Heating	Corridor	322.77	Yes	0.00	0	0.06	0.00	19.37	19.37	0.8	24.21	225
B27 - GIRLS LOCKER	Heating	Team room	128.03	No	15.00	5	0.06	75.00	7.68	82.68	0.8	103.35	175
B28 - PE OFFICE	Heating	Office	76.44	Yes	1.00	5	0.06	5.00	4.59	9.59	0.8	11.98	100
			1055.9		**32.00**							**279.19**	**1000**

ERU-1 VENTILATION CALCULATION

FCU-1 VENTILATION CALCULATION

Based on VMC 2018 - 403

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
System Number	Room Name	Condition Analyzed	Occupancy Category	Area	Default Population	Zone Population	People Outdoor Air Rate	Area Outdoor Air Rate	Occupancy Breathing Zone Airflow	Area Breathing Zone Airflow	Breathing Zone Airflow	Zone Air Distribution Effectiveness	Zone Outdoor Airflow	Outdoor Air Intake Flow Provided
				Az sqft	Yes/No	Pz people	Rp cfm/person	Ra cfm/sqft	Pz * Rp cfm	Az * Ra cfm	Vbz cfm	Ez	Voz cfm	cfm
FCU-1	A46 - OFFICE	Heating	Office	67.01	Yes	1.00	5	0.06	5.00	4.02	9.02	0.8	11.28	20
	A47 - LAUNDRY	Heating	Office	67.31	Yes	1.00	5	0.06	5.00	4.04	9.04	0.8	11.30	20
	A48 - TOILET	Heating	Corridor	72.48	Yes	0.00	0	0.06	0.00	4.35	4.35	0.8	5.44	20
TOTAL				**206.8**		**2.00**							**28.02**	**60**

FCU-1 VENTILATION CALCULATION

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS
VIRGINIA
VENTILATION CALCULATIONS

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: SLS
CHECKED BY: KDA

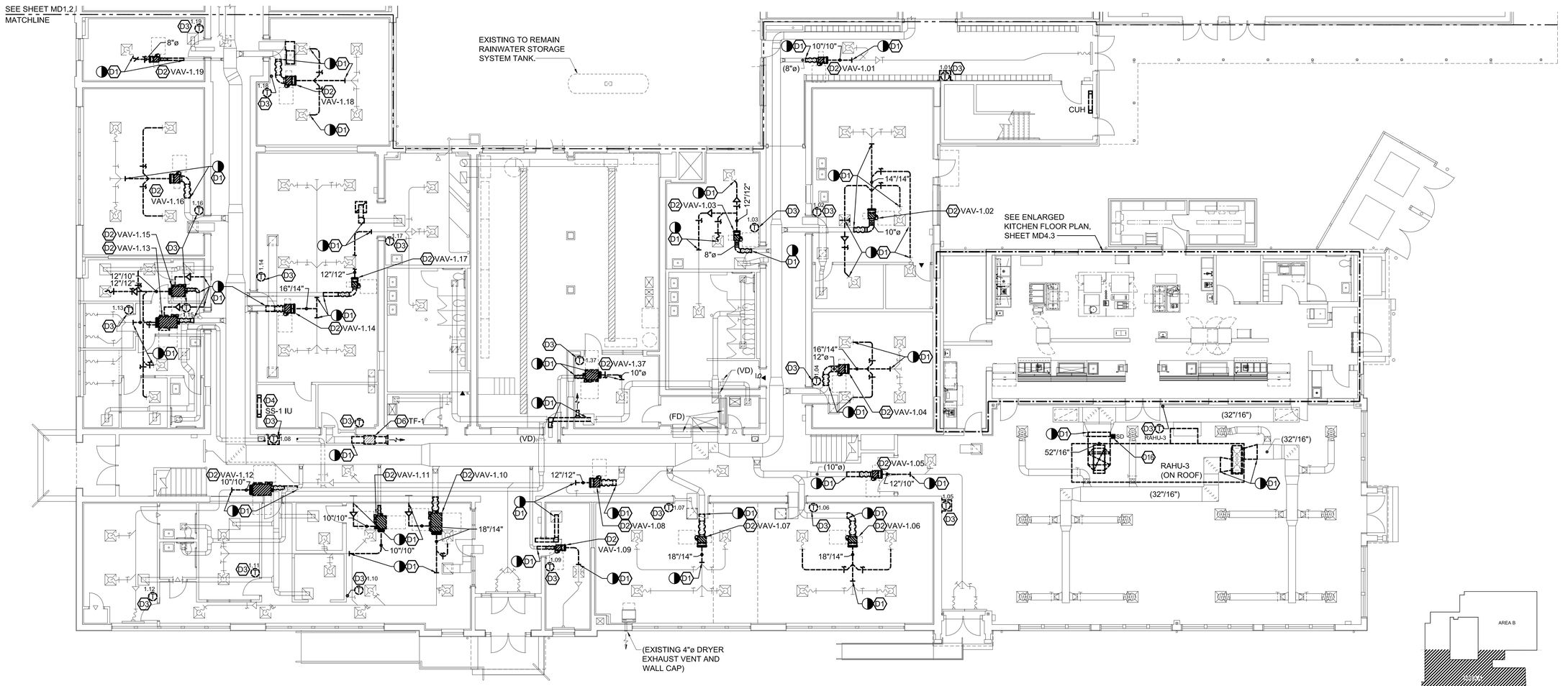
M0.8

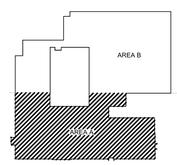
DATE: 12/20/2024

DEMOLITION NOTES	
NO.	DESCRIPTION
D1	DISCONNECT AND REMOVE EXISTING DUCTWORK TO EXTENT REQUIRED TO FACILITATE INSTALLATION OF NEW WORK. COVER AND PROTECT DUCTWORK OPENING DURING CONSTRUCTION. PROVIDE TEMPORARY SUPPORTS FOR REMAINING DUCTWORK WHERE REMOVAL OF CONNECTED UNIT REQUIRES.
D2	REMOVE VARIABLE AIR VOLUME TERMINAL BOX, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE. REMOVE AND REINSTALL SPRINKLER HEADS AND PIPING AS REQUIRED FOR CONSTRUCTION. A FIRE WATCH SHALL BE PROVIDED WHEN HEADS ARE NOT IN SERVICE.
D3	REMOVE THERMOSTAT/TEMPERATURE SENSOR, WIRING, AND ACCESSORIES COMPLETE.
D4	REMOVE SPLIT SYSTEM INDOOR UNIT, SUPPORTS, AND ACCESSORIES COMPLETE.
D16	DISCONNECT AND REMOVE EXISTING SMOKE DETECTOR. REFER TO ELECTRICAL DRAWINGS FOR FURTHER DETAILS.

NOTE: EXISTING CONDITIONS ILLUSTRATED HAVE BEEN DETERMINED FROM ORIGINAL CONSTRUCTION DOCUMENTS AND LIMITED NON-INVASIVE FIELD INVESTIGATION. THE CONTRACTOR SHALL INVESTIGATE FIELD CONDITIONS PRIOR TO COMMENCEMENT OF WORK, COORDINATE AND MAKE ADJUSTMENTS AS NECESSARY.

NOTE: SEAL ALL EXISTING MEDIUM PRESSURE DUCTWORK USING AEROSEAL OR APPROVED EQUAL. SEE SPECIFICATION 230100 FOR ADDITION INFORMATION.





KEY PLAN
NOT TO SCALE

TRUE NORTH

PARTIAL FIRST FLOOR PLAN - AREA "A" - MECHANICAL - DEMOLITION
SCALE: 1/8" = 1'-0"

COMMONWEALTH OF VIRGINIA
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
PARTIAL FIRST FLOOR PLAN - AREA "A" - MECHANICAL - DEMOLITION

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO:	21-156
DESIGNED BY:	CEP
DRAWN BY:	SLS
CHECKED BY:	KDA

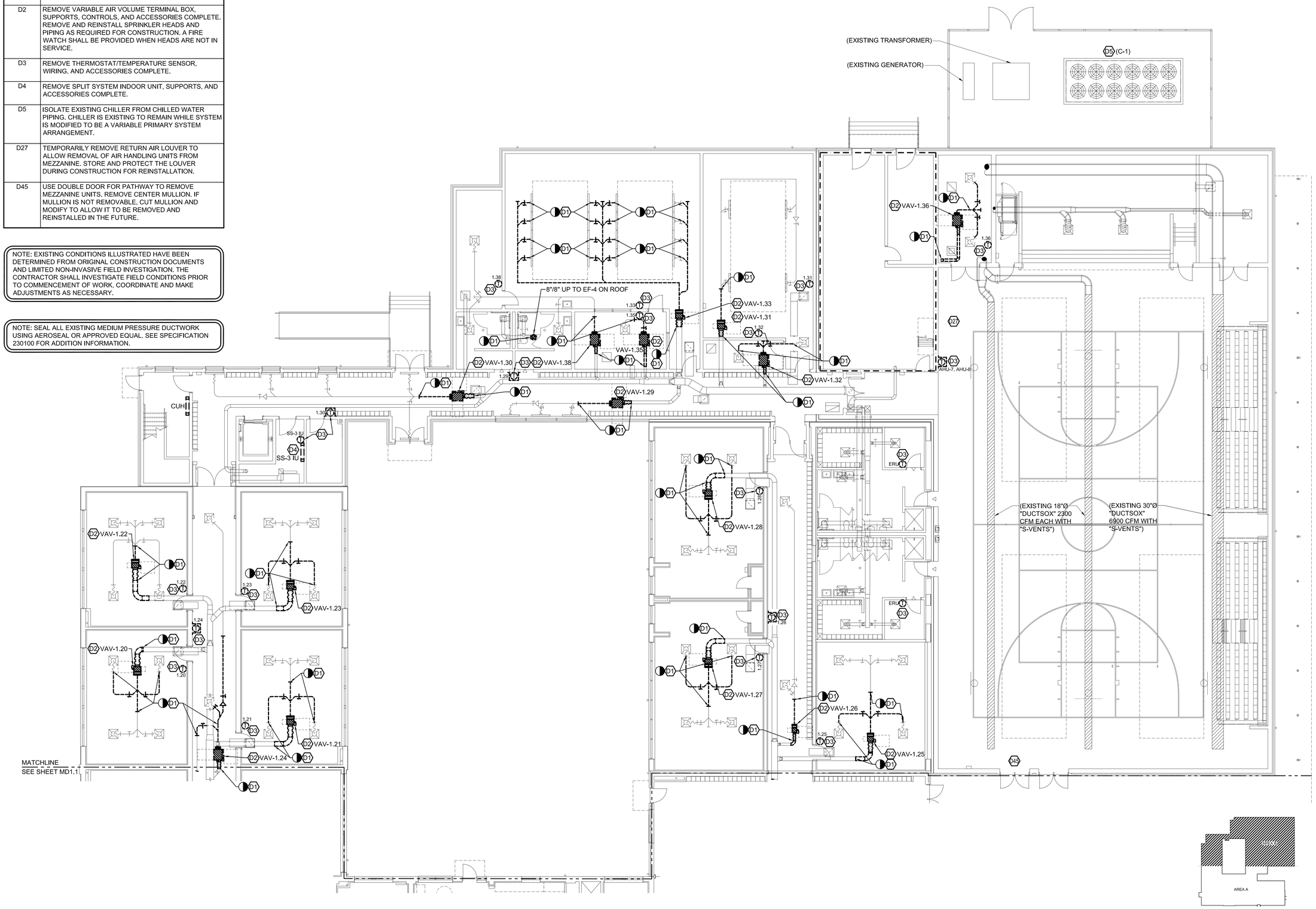
MD1.1

DATE: 12/20/2024

DEMOLITION NOTES	
NO.	DESCRIPTION
D1	DISCONNECT AND REMOVE EXISTING DUCTWORK TO EXTENT REQUIRED TO FACILITATE INSTALLATION OF NEW WORK. COVER AND PROTECT DUCTWORK OPENING DURING CONSTRUCTION. PROVIDE TEMPORARY SUPPORTS FOR REMAINING DUCTWORK WHERE REMOVAL OF CONNECTED UNIT REQUIRES.
D2	REMOVE VARIABLE AIR VOLUME TERMINAL BOX, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE. REMOVE AND REINSTALL SPRINKLER HEADS AND PIPING AS REQUIRED FOR CONSTRUCTION. A FIRE WATCH SHALL BE PROVIDED WHEN HEADS ARE NOT IN SERVICE.
D3	REMOVE THERMOSTAT/TEMPERATURE SENSOR, WIRING, AND ACCESSORIES COMPLETE.
D4	REMOVE SPLIT SYSTEM INDOOR UNIT, SUPPORTS, AND ACCESSORIES COMPLETE.
D5	ISOLATE EXISTING CHILLER FROM CHILLED WATER PIPING. CHILLER IS EXISTING TO REMAIN WHILE SYSTEM IS MODIFIED TO BE A VARIABLE PRIMARY SYSTEM ARRANGEMENT.
D27	TEMPORARILY REMOVE RETURN AIR LOUVER TO ALLOW REMOVAL OF AIR HANDLING UNITS FROM MEZZANINE. STORE AND PROTECT THE LOUVER DURING CONSTRUCTION FOR REINSTALLATION.
D45	USE DOUBLE DOOR FOR PATHWAY TO REMOVE MEZZANINE UNITS. REMOVE CENTER MULLION. IF MULLION IS NOT REMOVABLE, CUT MULLION AND MODIFY TO ALLOW IT TO BE REMOVED AND REINSTALLED IN THE FUTURE.

NOTE: EXISTING CONDITIONS ILLUSTRATED HAVE BEEN DETERMINED FROM ORIGINAL CONSTRUCTION DOCUMENTS AND LIMITED NON-INVASIVE FIELD INVESTIGATION. THE CONTRACTOR SHALL INVESTIGATE FIELD CONDITIONS PRIOR TO COMMENCEMENT OF WORK, COORDINATE AND MAKE ADJUSTMENTS AS NECESSARY.

NOTE: SEAL ALL EXISTING MEDIUM PRESSURE DUCTWORK USING AEROSEAL OR APPROVED EQUAL. SEE SPECIFICATION 230100 FOR ADDITION INFORMATION.



PARTIAL FIRST FLOOR PLAN - AREA "B" - MECHANICAL - DEMOLITION

SCALE: 1/8" = 1'-0"

KEY PLAN
NOT TO SCALE

TRUE NORTH

COMMONWEALTH OF VIRGINIA
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
PARTIAL FIRST FLOOR PLAN - AREA "B" - MECHANICAL - DEMOLITION

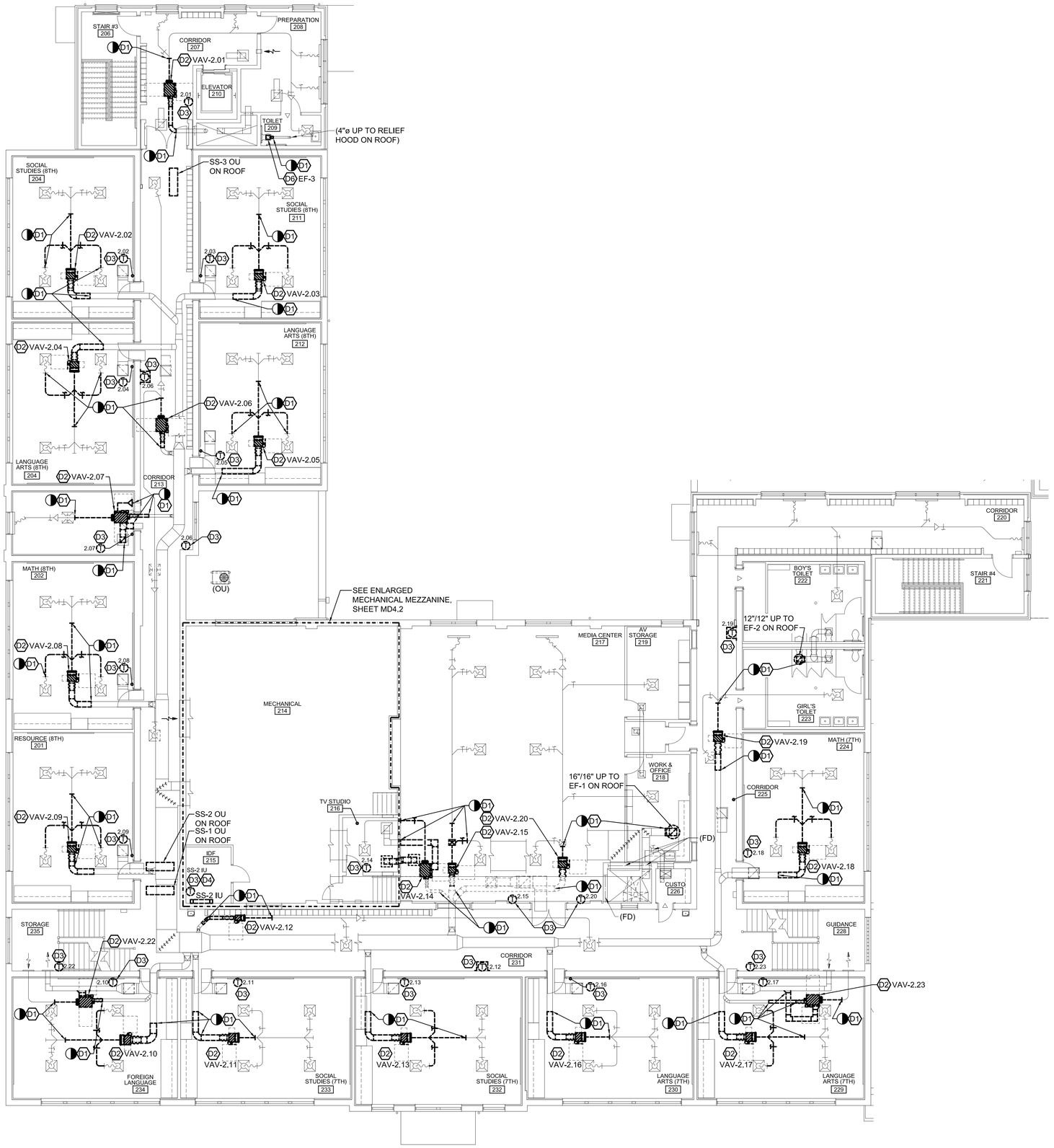
REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO:	21-156
DESIGNED BY:	CEP
DRAWN BY:	SLS
CHECKED BY:	KDA

MD1.2

DATE: 12/20/2024



SECOND FLOOR PLAN - AREA "A" - MECHANICAL - DEMOLITION

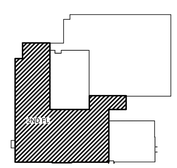
SCALE: 1/8" = 1'-0"

DEMOLITION NOTES ⬡	
NO.	DESCRIPTION
D1	DISCONNECT AND REMOVE EXISTING DUCTWORK TO EXTENT REQUIRED TO FACILITATE INSTALLATION OF NEW WORK. COVER AND PROTECT DUCTWORK OPENING DURING CONSTRUCTION. PROVIDE TEMPORARY SUPPORTS FOR REMAINING DUCTWORK WHERE REMOVAL OF CONNECTED UNIT REQUIRES.
D2	REMOVE VARIABLE AIR VOLUME TERMINAL BOX, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE. REMOVE AND REINSTALL SPRINKLER HEADS AND PIPING AS REQUIRED FOR CONSTRUCTION. A FIRE WATCH SHALL BE PROVIDED WHEN HEADS ARE NOT IN SERVICE.
D3	REMOVE THERMOSTAT/TEMPERATURE SENSOR, WIRING, AND ACCESSORIES COMPLETE.
D4	REMOVE SPLIT SYSTEM INDOOR UNIT, SUPPORTS, AND ACCESSORIES COMPLETE.

NOTE: EXISTING CONDITIONS ILLUSTRATED HAVE BEEN DETERMINED FROM ORIGINAL CONSTRUCTION DOCUMENTS AND LIMITED NON-INVASIVE FIELD INVESTIGATION. THE CONTRACTOR SHALL INVESTIGATE FIELD CONDITIONS PRIOR TO COMMENCEMENT OF WORK, COORDINATE AND MAKE ADJUSTMENTS AS NECESSARY.

NOTE: SEAL ALL EXISTING MEDIUM PRESSURE DUCTWORK USING AEROSEAL OR APPROVED EQUAL. SEE SPECIFICATION 230100 FOR ADDITION INFORMATION.

KEY PLAN
NOT TO SCALE



TRUE NORTH

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA

SECOND FLOOR PLAN - AREA "A" - MECHANICAL - DEMOLITION

REVISIONS

MARK	DESCRIPTION	DATE

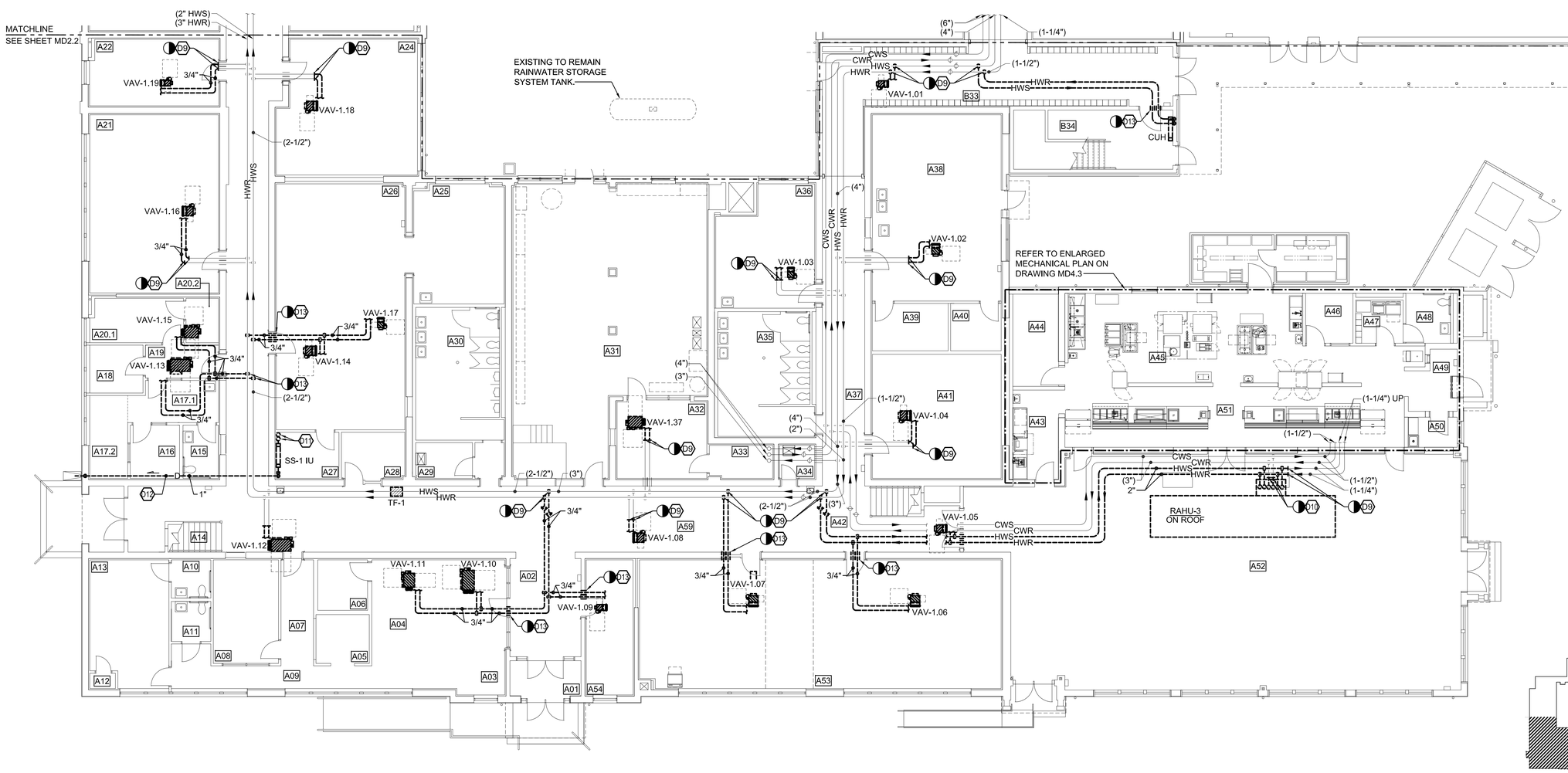
COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: SLS
CHECKED BY: KDA

MD1.3

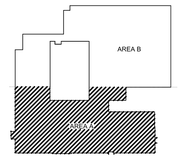
DATE: 12/20/2024

DEMOLITION NOTES	
NO.	DESCRIPTION
D9	ISOLATE UNIT FROM HWR/S PIPING. DISCONNECT AND REMOVE HWR/S PIPING, SUPPORTS, AND ACCESSORIES COMPLETE TO INCLUDE VAV BOX VALVE PACKAGE AND BRANCH PIPING.
D10	ISOLATE ROOFTOP UNIT FROM CWR/S PIPING. DISCONNECT UNIT FROM CWR/S PIPING AND REMOVE PIPING TO THE EXTENT REQUIRED FOR INSTALLATION OF THE NEW WORK.
D11	REMOVE EXISTING RG/RL PIPING, ACCESSORIES, AND SUPPORTS COMPLETE. EVACUATE REFRIGERANT AND DISPOSE OF ACCORDING TO CODE.
D12	REMOVE DRAIN PIPING, ACCESSORIES, AND SUPPORTS COMPLETE.
D13	REMOVE PIPE SLEEVE WHERE NEW WORK REQUIRES INCREASED PIPE SIZE.

NOTE: EXISTING CONDITIONS ILLUSTRATED HAVE BEEN DETERMINED FROM ORIGINAL CONSTRUCTION DOCUMENTS AND LIMITED NON-INVASIVE FIELD INVESTIGATION. THE CONTRACTOR SHALL INVESTIGATE FIELD CONDITIONS PRIOR TO COMMENCEMENT OF WORK, COORDINATE AND MAKE ADJUSTMENTS AS NECESSARY.



PARTIAL FIRST FLOOR PLAN - AREA "A" - PIPING - DEMOLITION
SCALE: 1/8" = 1'-0"



KEY PLAN
NOT TO SCALE

TRUE NORTH

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
PARTIAL FIRST FLOOR PLAN - AREA "A" - PIPING - DEMOLITION

REVISIONS

MARK	DESCRIPTION	DATE

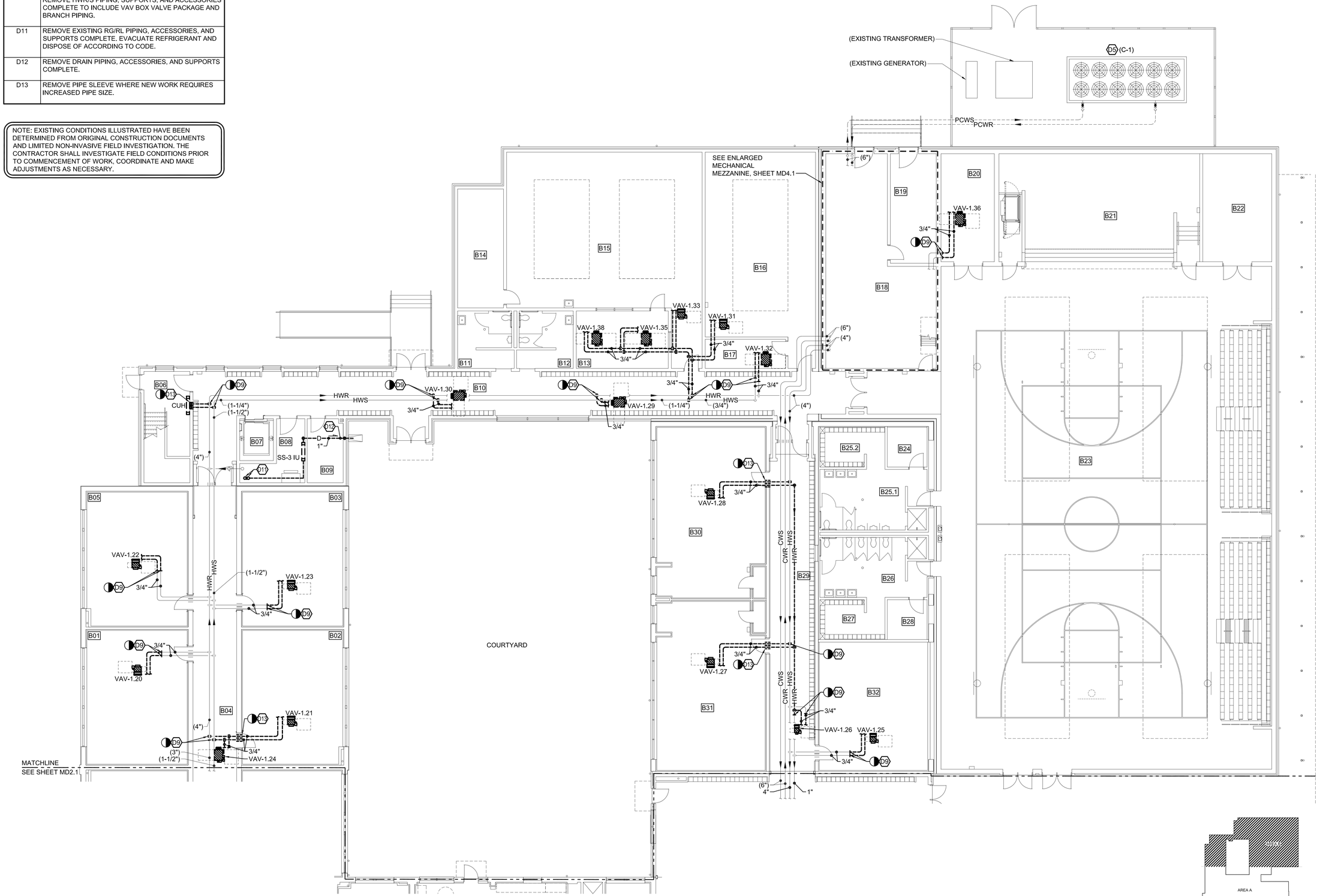
COMM. NO:	21-156
DESIGNED BY:	CEP
DRAWN BY:	SLS
CHECKED BY:	KDA

MD2.1

DATE: 12/20/2024

DEMOLITION NOTES	
NO.	DESCRIPTION
D5	ISOLATE EXISTING CHILLER FROM CHILLED WATER PIPING. CHILLER IS EXISTING TO REMAIN WHILE SYSTEM IS MODIFIED TO BE A VARIABLE PRIMARY SYSTEM ARRANGEMENT.
D9	ISOLATE UNIT FROM HWR/S PIPING. DISCONNECT AND REMOVE HWR/S PIPING, SUPPORTS, AND ACCESSORIES COMPLETE TO INCLUDE VAV BOX VALVE PACKAGE AND BRANCH PIPING.
D11	REMOVE EXISTING RG/RL PIPING, ACCESSORIES, AND SUPPORTS COMPLETE. EVACUATE REFRIGERANT AND DISPOSE OF ACCORDING TO CODE.
D12	REMOVE DRAIN PIPING, ACCESSORIES, AND SUPPORTS COMPLETE.
D13	REMOVE PIPE SLEEVE WHERE NEW WORK REQUIRES INCREASED PIPE SIZE.

NOTE: EXISTING CONDITIONS ILLUSTRATED HAVE BEEN DETERMINED FROM ORIGINAL CONSTRUCTION DOCUMENTS AND LIMITED NON-INVASIVE FIELD INVESTIGATION. THE CONTRACTOR SHALL INVESTIGATE FIELD CONDITIONS PRIOR TO COMMENCEMENT OF WORK, COORDINATE AND MAKE ADJUSTMENTS AS NECESSARY.



PARTIAL FIRST FLOOR PLAN - AREA "B" - PIPING - DEMOLITION

SCALE: 1/8" = 1'-0"

KEY PLAN

NOT TO SCALE

TRUE NORTH

COMMONWEALTH OF VIRGINIA
KEVIN D. ALLEN
Lic. No. 023349
12/20/2024
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
PARTIAL FIRST FLOOR PLAN - AREA "B" - PIPING - DEMOLITION

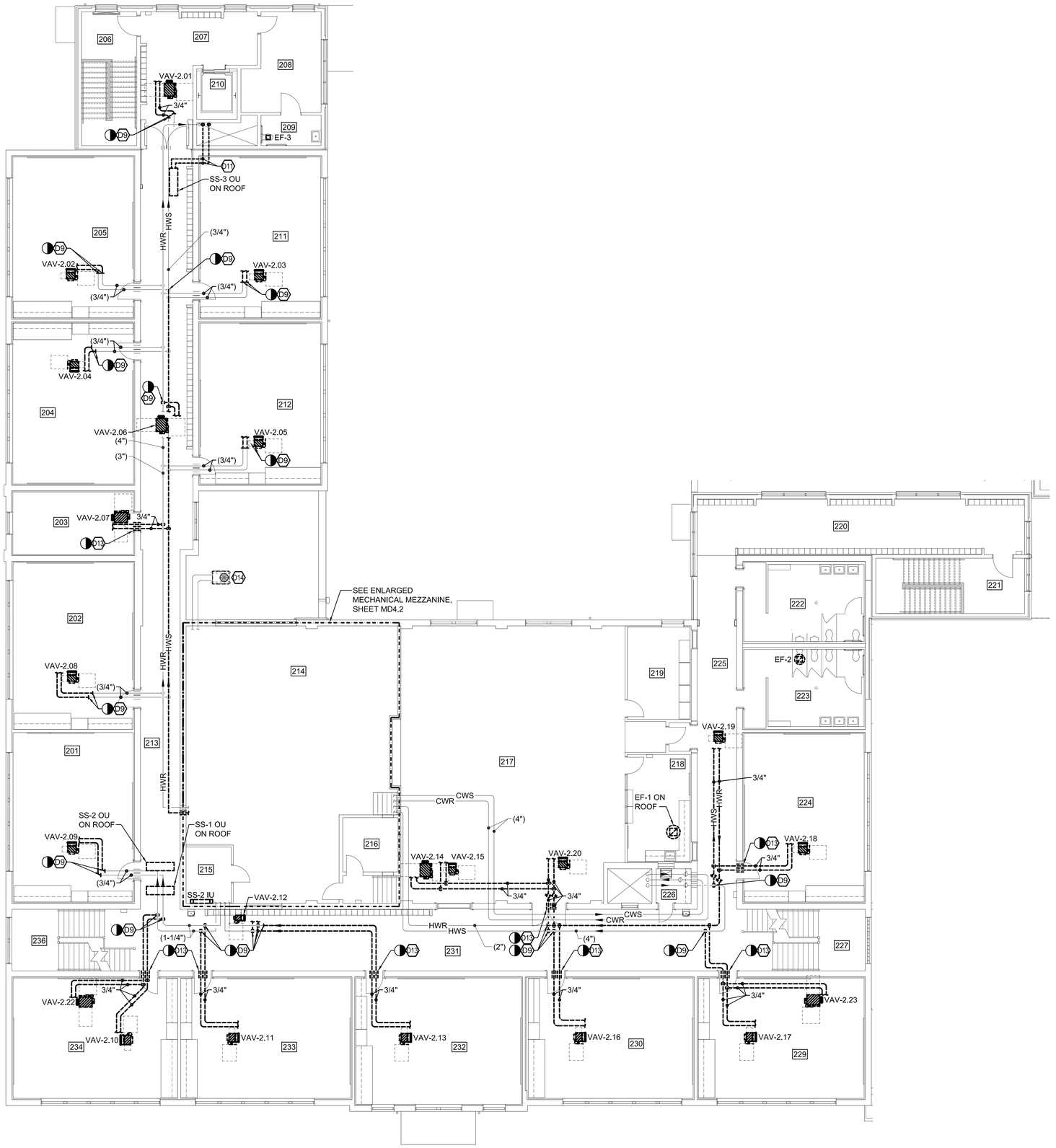
REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO:	21-156
DESIGNED BY:	CEP
DRAWN BY:	SLS
CHECKED BY:	KDA

MD2.2

DATE: 12/20/2024



SECOND FLOOR PLAN - AREA "A" - PIPING - DEMOLITION

SCALE: 1/8" = 1'-0"

DEMOLITION NOTES	
NO.	DESCRIPTION
D9	ISOLATE UNIT FROM HWR/S PIPING. DISCONNECT AND REMOVE HWR/S PIPING, SUPPORTS, AND ACCESSORIES COMPLETE TO INCLUDE VAV BOX VALVE PACKAGE AND BRANCH PIPING.
D11	REMOVE EXISTING RG/RL PIPING, ACCESSORIES, AND SUPPORTS COMPLETE. EVACUATE REFRIGERANT AND DISPOSE OF ACCORDING TO CODE.
D12	REMOVE DRAIN PIPING, ACCESSORIES, AND SUPPORTS COMPLETE.
D13	REMOVE PIPE SLEEVE WHERE NEW WORK REQUIRES INCREASED PIPE SIZE.
D14	EXISTING CONDENSING UNIT FOR AHU-5 SERVING THE AQUATIC CENTER. THIS EXISTING UNIT WILL HAVE BEEN REPLACED PRIOR TO CONSTRUCTION AND THEREFORE MAY NOT BE ACCURATELY REPRESENTED IN THESE DOCUMENTS. CONTACT THE OWNER AND REFER TO AQUATIC CENTER HVAC REPLACEMENT PROJECT IF FURTHER COORDINATION IS REQUIRED

NOTE: EXISTING CONDITIONS ILLUSTRATED HAVE BEEN DETERMINED FROM ORIGINAL CONSTRUCTION DOCUMENTS AND LIMITED NON-INVASIVE FIELD INVESTIGATION. THE CONTRACTOR SHALL INVESTIGATE FIELD CONDITIONS PRIOR TO COMMENCEMENT OF WORK, COORDINATE AND MAKE ADJUSTMENTS AS NECESSARY.

KEY PLAN
NOT TO SCALE

TRUE NORTH

COMMONWEALTH OF VIRGINIA
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
SECOND FLOOR PLAN - AREA "A" - PIPING - DEMOLITION

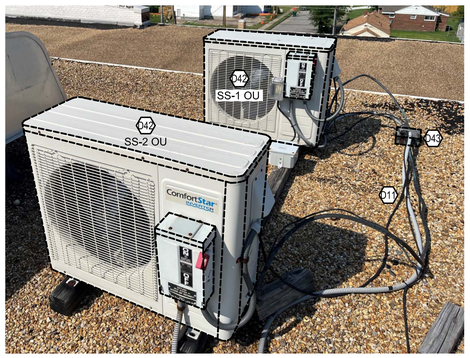
REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO:	21-156
DESIGNED BY:	CEP
DRAWN BY:	SLS
CHECKED BY:	KDA

MD2.3

DATE: 12/20/2024

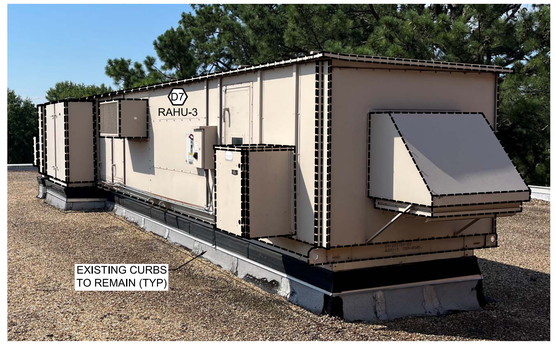


P1 MD3.1 NOT TO SCALE

PHOTO 1 - OUTDOOR CONDENSING UNITS EXISTING CONDITIONS.

P2 MD3.1 NOT TO SCALE

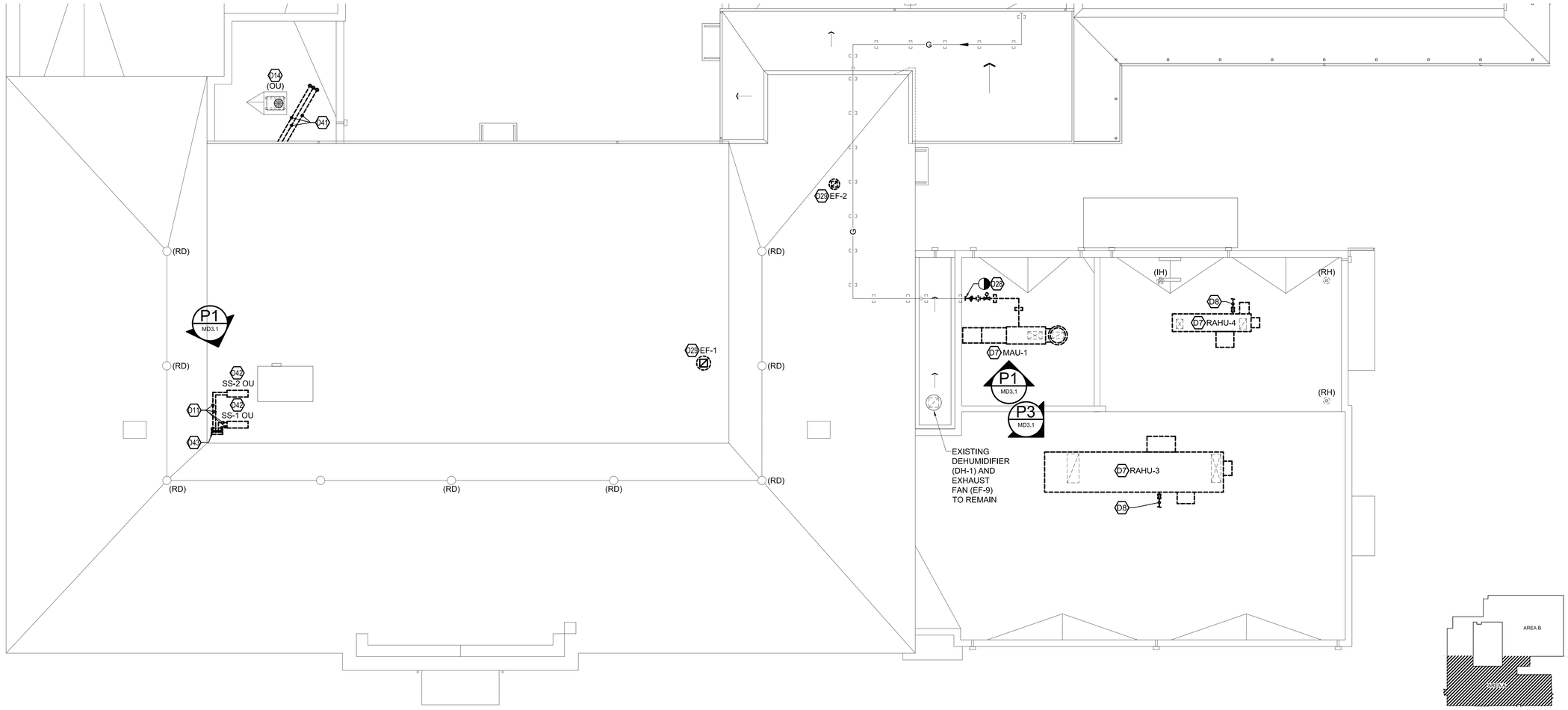
PHOTO 2 - KITCHEN MAKEUP AIR UNIT AND EXHAUST FAN EXISTING CONDITIONS.



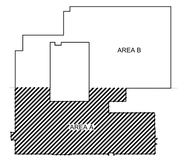
P3 MD3.1 NOT TO SCALE

PHOTO 3 - RAHU-3 EXISTING CONDITIONS.

DEMOLITION NOTES	
NO.	DESCRIPTION
D7	DISCONNECT DUCTWORK AND REMOVE ROOFTOP UNIT, CONTROLS, AND ACCESSORIES COMPLETE. ROOF CURB TO REMAIN. PROVIDE 1/2" PLYWOOD TEMPORARY COVER AND WEATHER-PROOF TARP ENTIRE ROOF CURB UNTIL NEW UNIT IS PLACED.
D8	REMOVE ROOF MOUNTED CONDENSATE DRAIN COMPLETE.
D11	REMOVE EXISTING RG/RL PIPING, ACCESSORIES, AND SUPPORTS COMPLETE. EVACUATE REFRIGERANT AND DISPOSE OF ACCORDING TO CODE.
D14	EXISTING CONDENSING UNIT FOR AHU-5 SERVING THE AQUATIC CENTER. THIS EXISTING UNIT WILL HAVE BEEN REPLACED PRIOR TO CONSTRUCTION AND THEREFORE MAY NOT BE ACCURATELY REPRESENTED IN THESE DOCUMENTS. CONTACT THE OWNER AND REFER TO AQUATIC CENTER HVAC REPLACEMENT PROJECT IF FURTHER COORDINATION IS REQUIRED.
D28	ISOLATE UNIT FROM GAS PIPING AND REMOVE GAS PIPING AND SUPPORTS COMPLETE TO POINT REQUIRED FOR INSTALLATION OF NEW WORK.
D29	REMOVE EXISTING ROOF MOUNTED EXHAUST FAN, ACCESSORIES, AND CONTROLS COMPLETE. ROOF CURB TO REMAIN. PROVIDE 1/2" PLYWOOD TEMPORARY COVER AND WEATHER-PROOF TARP FOR ENTIRE ROOF CURB UNTIL NEW UNIT IS PLACED.
D41	REMOVE ROOF MOUNTED CONDENSATE DRAIN COMPLETE. TEMPORARILY COVER AND PROTECT EXTERIOR WALL PENETRATION DURING CONSTRUCTION.
D42	REMOVE SPLIT SYSTEM OUTDOOR UNIT, SUPPORTS, ACCESSORIES, AND CONTROLS COMPLETE.
D43	REMOVE REFRIGERANT PIPES THROUGH ROOF AND FILL AND CAP EXISTING PITCH POCKET WHERE OPENING WILL NOT BE USED FOR NEW PIPE PORTAL SYSTEM. OTHERWISE PROVIDE 1/2" PLYWOOD TEMPORARY COVER AND WEATHER-PROOF TARP FOR REMAINING ROOF OPENING WHERE WILL BE RE-USED FOR NEW PIPE PORTAL SYSTEM.



PARTIAL ROOF PLAN - AREA "A" - MECHANICAL - DEMOLITION
SCALE: 1/8" = 1'-0"



KEY PLAN
NOT TO SCALE

TRUE NORTH

COMMONWEALTH OF VIRGINIA
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
PARTIAL ROOF PLAN - AREA "A" - MECHANICAL - DEMOLITION

REVISIONS		
MARK	DESCRIPTION	DATE

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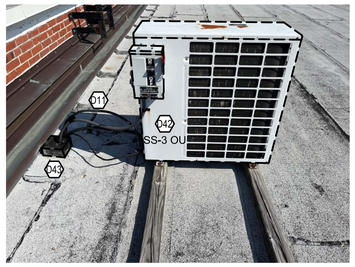
CHECKED BY:	KDA

MD3.1

DATE: 12/20/2024



P4 MD3.2 NOT TO SCALE

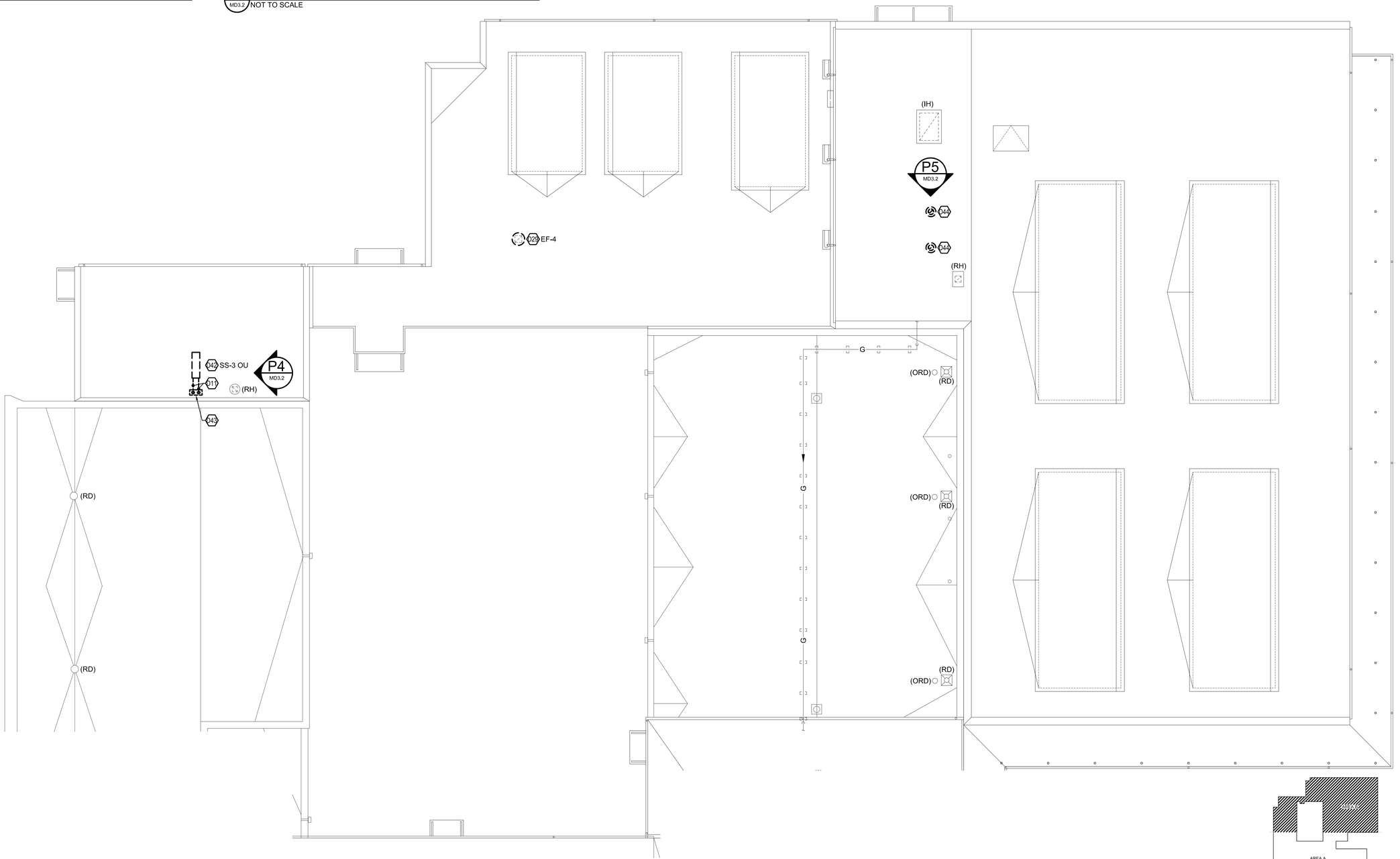
PHOTO 4 - OUTDOOR CONDENSING UNIT EXISTING CONDITIONS.

P5 MD3.2 NOT TO SCALE

PHOTO 5 - BOILER VENT FLUE THROUGH ROOF EXISTING CONDITIONS.

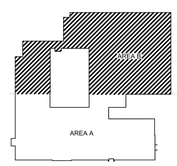
DEMOLITION NOTES	
NO.	DESCRIPTION
D11	REMOVE EXISTING RG/RL PIPING, ACCESSORIES, AND SUPPORTS COMPLETE. EVACUATE REFRIGERANT AND DISPOSE OF ACCORDING TO CODE.
D29	REMOVE EXISTING ROOF MOUNTED EXHAUST FAN, ACCESSORIES, AND CONTROLS COMPLETE. ROOF CURB TO REMAIN. PROVIDE 1/2" PLYWOOD TEMPORARY COVER AND WEATHER-PROOF TARP FOR ENTIRE ROOF CURB UNTIL NEW UNIT IS PLACED.
D42	REMOVE SPLIT SYSTEM OUTDOOR UNIT, SUPPORTS, ACCESSORIES, AND CONTROLS COMPLETE.

DEMOLITION NOTES	
NO.	DESCRIPTION
D43	REMOVE REFRIGERANT PIPES THROUGH ROOF AND FILL AND CAP EXISTING PITCH POCKET WHERE OPENING WILL NOT BE USED FOR NEW PIPE PORTAL SYSTEM. OTHERWISE PROVIDE 1/2" PLYWOOD TEMPORARY COVER AND WEATHER-PROOF TARP FOR REMAINING ROOF OPENING WHERE WILL BE RE-USED FOR NEW PIPE PORTAL SYSTEM.
D44	REMOVE EXISTING BOILER STACK CAP, FLUE PIPE, AND FLASHING COMPLETE. PROVIDE 1/2" PLYWOOD TEMPORARY COVER AND WEATHER-PROOF TARP FOR REMAINING ROOF PENETRATION.



PARTIAL ROOF PLAN - AREA "B" - MECHANICAL - DEMOLITION

SCALE: 1/8" = 1'-0"



KEY PLAN

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TRUE NORTH

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
PARTIAL ROOF PLAN - AREA "B" - MECHANICAL - DEMOLITION

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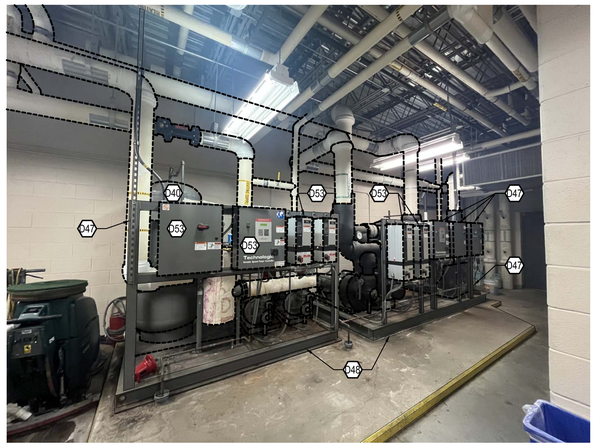
MD3.2

DATE: 12/20/2024



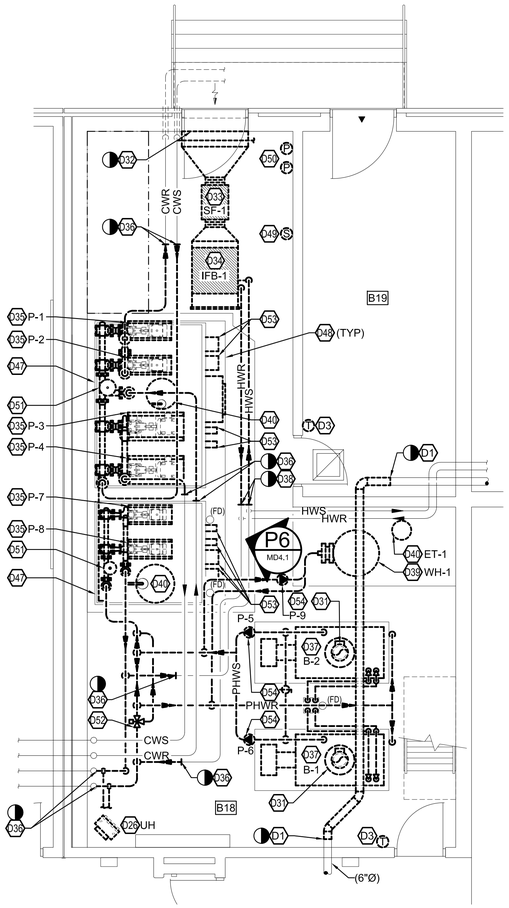
P6 MD4.1 PHOTO 6 - PUMP PACKAGE EXISTING CONDITIONS.
NOT TO SCALE

NOTE: EXISTING CONDITIONS ILLUSTRATED HAVE BEEN DETERMINED FROM ORIGINAL CONSTRUCTION DOCUMENTS AND LIMITED NON-INVASIVE FIELD INVESTIGATION. THE CONTRACTOR SHALL INVESTIGATE FIELD CONDITIONS PRIOR TO COMMENCEMENT OF WORK, COORDINATE AND MAKE ADJUSTMENTS AS NECESSARY.

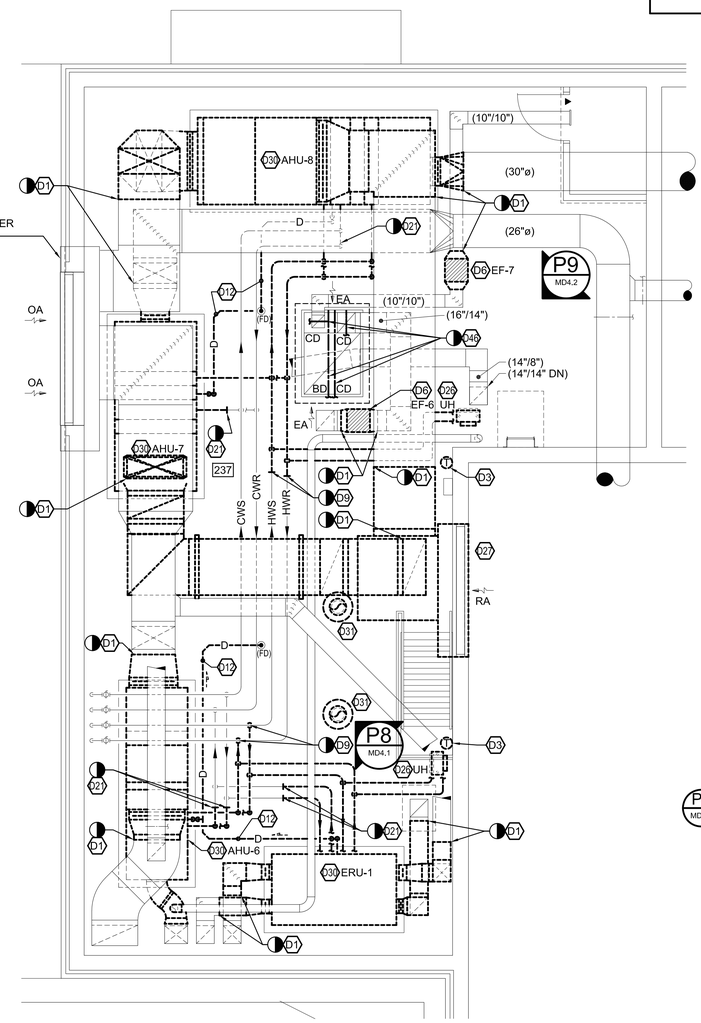
NOTE: SEAL ALL EXISTING MEDIUM PRESSURE DUCTWORK USING AEROSEAL OR APPROVED EQUAL. SEE SPECIFICATION 230100 FOR ADDITION INFORMATION.

DEMOLITION NOTES	
NO.	DESCRIPTION
D1	DISCONNECT AND REMOVE EXISTING DUCTWORK TO EXTENT REQUIRED TO FACILITATE INSTALLATION OF NEW WORK. COVER AND PROTECT DUCTWORK OPENING DURING CONSTRUCTION. PROVIDE TEMPORARY SUPPORTS FOR REMAINING DUCTWORK WHERE REMOVAL OF CONNECTED UNIT REQUIRES.
D3	REMOVE THERMOSTAT/TEMPERATURE SENSOR, WIRING, AND ACCESSORIES COMPLETE.
D6	REMOVE EXHAUST FAN, SUPPORTS, ACCESSORIES, AND CONTROLS COMPLETE.
D9	ISOLATE UNIT FROM HWR/S PIPING. DISCONNECT AND REMOVE HWR/S PIPING, SUPPORTS, AND ACCESSORIES COMPLETE TO INCLUDE VAV BOX VALVE PACKAGE AND BRANCH PIPING.
D21	ISOLATE AIR HANDLING UNIT OR ENERGY RECOVERY UNIT FROM CWS/R PIPING. DISCONNECT AIR HANDLING UNIT AND REMOVE PIPING TO THE EXTENT REQUIRED FOR THE INSTALLATION OF THE NEW WORK.
D26	REMOVE UNIT HEATER, HWR/S PIPING, HWR/S PIPING, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
D27	TEMPORARILY REMOVE RETURN AIR LOUVER TO ALLOW REMOVAL OF AIR HANDLING UNITS FROM MEZZANINE. STORE AND PROTECT THE LOUVER DURING CONSTRUCTION FOR REINSTALLATION.
D30	REMOVE AIR HANDLING UNIT OR ENERGY RECOVERY UNIT, CONTROLS, AND ACCESSORIES COMPLETE. REMOVE UNIT THROUGH WALL OPENING CREATED FOR INSTALLATION OF NEW OVERHEAD DOOR IN EXTERIOR WALL. UNIT HOUSEKEEPING PAD TO REMAIN.
D31	REMOVE BOILER FLUE PIPE UP THROUGH ROOF.
D32	REMOVE DUCTWORK TO POINT INDICATED AND CAP REMAINING DUCTWORK THROUGH WALL. CAP SHALL BE 24 GAUGE ALUMINUM SHEETMETAL WITH 2" RIGID BOARD INSULATION ATTACHED TO COVER OPENING.

DEMOLITION NOTES	
NO.	DESCRIPTION
D33	REMOVE SUPPLY FAN, DUCTWORK, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
D34	REMOVE INTEGRAL FACE AND BYPASS DAMPER AND HOT WATER COIL, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
D35	PUMP PACKAGE GROUTED BASE FRAME TO REMAIN. REMOVE ALL PUMPS, PIPING, VFD'S, CONTROLS, EXPANSION TANKS, SEPARATORS, AND WIRING COMPLETE. SUPPORTS FOR COMPONENTS SHALL REMAIN FOR REUSE. HOUSEKEEPING PAD TO REMAIN.
D36	DISCONNECT PIPING AND REMOVE COMPLETE TO THE POINT REQUIRED FOR INSTALLATION OF NEW WORK.
D37	REMOVE BOILER AND ASSOCIATED INLINE PUMPS, PIPING, CONTROLS AND ACCESSORIES COMPLETE.
D38	ISOLATE INTEGRAL FACE AND BYPASS DAMPER FROM HWR/S PIPING. REMOVE HWR/S PIPING TO POINT INDICATED AND CAP.
D39	REMOVE WATER HEATER AND ASSOCIATED PIPING AND PUMPS, CONTROLS, AND ACCESSORIES COMPLETE.
D40	REMOVE EXPANSION TANK, AND ACCESSORIES COMPLETE. SUPPORTS FOR HWR/S AND CWR/S EXPANSION TANKS SHALL REMAIN FOR RE-USE. SUPPORTS FOR DOMESTIC WATER EXPANSION TANK SHALL BE REMOVED.
D46	REMOVE OUTDOOR AIR INTAKE DUCTWORK UP TO INTAKE HOOD CONNECTION. REMOVE CONTROL OR BALANCING DAMPERS COMPLETE.
D47	EXISTING PUMP PACKAGE FRAMING SHALL BE EXISTING TO REMAIN.
D48	EXISTING PUMP PACKAGE STEEL BASE AND CONCRETE FILLING TO REMAIN. CONTRACTOR SHALL REPAIR ALL DAMAGED CONCRETE AT EXISTING PUMP PACKAGE BASE AND HOUSEKEEPING PAD TO PROVIDE A SMOOTH SURFACE FOR NEW EQUIPMENT.
D49	REMOVE EXISTING SUPPLY FAN SWITCH, WIRING, AND ACCESSORIES COMPLETE.
D50	REFER TO ELECTRICAL DRAWINGS FOR REMOVAL OF BOILER EMERGENCY PUSH BUTTONS.
D51	REMOVE AIR DIRT SEPARATOR AND ACCESSORIES COMPLETE. SUPPORTS SHALL BE EXISTING TO REMAIN FOR RE-USE.
D52	REMOVE HOT WATER RESET CONTROL VALVE AND ACCESSORIES COMPLETE.
D53	PUMP VFDS AND CONTROLS TO BE REMOVED. SUPPORTS SHALL BE EXISTING TO REMAIN FOR RE-USE.
D54	REMOVE INLINE PUMP, ACCESSORIES, SUPPORTS, AND CONTROLS COMPLETE.



ENLARGED FIRST FLOOR PLAN - MECHANICAL ROOM - DEMOLITION
SCALE: 1/4" = 1'-0"



ENLARGED SECOND FLOOR PLAN - MECHANICAL MEZZANINE - DEMOLITION
SCALE: 1/4" = 1'-0"

P8 MD4.1 PHOTO 8 - MECHANICAL MEZZANINE EXISTING CONDITIONS
NOT TO SCALE

KEY PLAN
NOT TO SCALE
TRUE NORTH

COMMONWEALTH OF VIRGINIA
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
ENLARGED FLOOR PLANS - MECHANICAL - DEMOLITION

REVISIONS

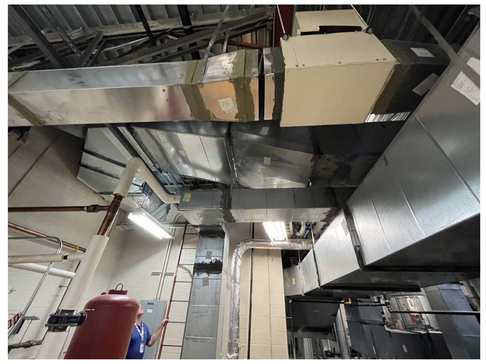
MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: SLS
CHECKED BY: KDA

MD4.1

DATE: 12/20/2024

P7 MD4.2 PHOTO 7 - OUTDOOR AIR INTAKE LOUVER EXISTING CONDITIONS.
NOT TO SCALE



P9 MD4.1 PHOTO 9 - MECHANICAL MEZZANINE EXISTING CONDITIONS.
NOT TO SCALE

NOTE: EXISTING CONDITIONS ILLUSTRATED HAVE BEEN DETERMINED FROM ORIGINAL CONSTRUCTION DOCUMENTS AND LIMITED NON-INVASIVE FIELD INVESTIGATION. THE CONTRACTOR SHALL INVESTIGATE FIELD CONDITIONS PRIOR TO COMMENCEMENT OF WORK, COORDINATE AND MAKE ADJUSTMENTS AS NECESSARY.

NOTE: SEAL ALL EXISTING MEDIUM PRESSURE DUCTWORK USING AEROSEAL OR APPROVED EQUAL. SEE SPECIFICATION 230100 FOR ADDITION INFORMATION.

DEMOLITION NOTES ⬡	
NO.	DESCRIPTION
D1	DISCONNECT AND REMOVE EXISTING DUCTWORK TO EXTENT REQUIRED TO FACILITATE INSTALLATION OF NEW WORK. COVER AND PROTECT DUCTWORK OPENING DURING CONSTRUCTION. PROVIDE TEMPORARY SUPPORTS FOR REMAINING DUCTWORK WHERE REMOVAL OF CONNECTED UNIT REQUIRES.
D3	REMOVE THERMOSTAT/TEMPERATURE SENSOR, WIRING, AND ACCESSORIES COMPLETE.
D6	REMOVE SPLIT SYSTEM INDOOR UNIT, SUPPORTS, AND ACCESSORIES COMPLETE.
D9	ISOLATE UNIT FROM HWR/S PIPING, DISCONNECT AND REMOVE HWR/S PIPING, SUPPORTS, AND ACCESSORIES COMPLETE TO INCLUDE VAV BOX VALVE PACKAGE AND BRANCH PIPING.
D11	REMOVE EXISTING RG/RL PIPING, ACCESSORIES, AND SUPPORTS COMPLETE. EVACUATE REFRIGERANT AND DISPOSE OF ACCORDING TO CODE.
D12	REMOVE DRAIN PIPING, ACCESSORIES, AND SUPPORTS COMPLETE.
D21	ISOLATE AIR HANDLING UNIT OR ENERGY RECOVERY UNIT FROM CWS/R PIPING. DISCONNECT AIR HANDLING UNIT AND REMOVE PIPING TO THE EXTENT REQUIRED FOR THE INSTALLATION OF THE NEW WORK.
D22	REMOVE AIR HANDLING UNIT, CONTROLS, AND ACCESSORIES COMPLETE. REMOVE UNIT THROUGH WALL OPENING CREATED BY TEMPORARY REMOVAL OF LOUVER.
D24	TEMPORARILY REMOVE OUTDOOR AIR INTAKE LOUVER TO ALLOW REMOVAL OF AIR HANDLING UNITS FROM MECHANICAL ROOM. STORE AND PROTECT THE LOUVER DURING CONSTRUCTION FOR REINSTALLATION.
D25	REMOVE DUCT HEATING COIL, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE. REMOVE UNIT HEATER, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
D46	REMOVE OUTDOOR AIR INTAKE DUCTWORK UP TO INTAKE HOOD CONNECTION. REMOVE CONTROL OR BALANCING DAMPERS COMPLETE.
D56	AHU-5 SHALL BE EXISTING TO REMAIN.

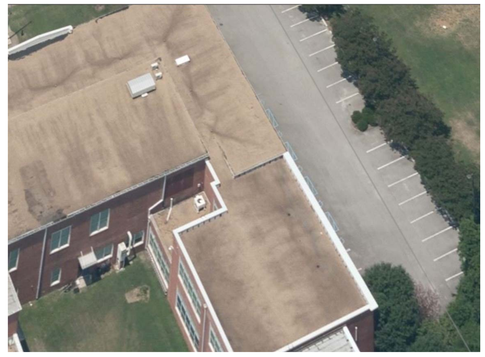
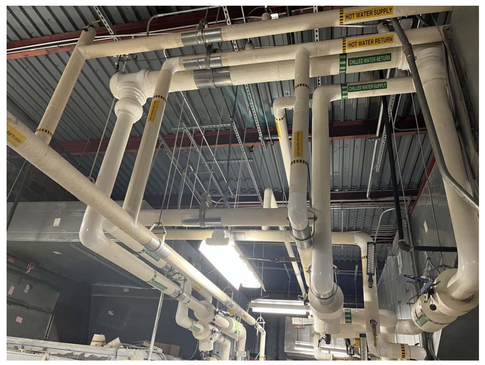
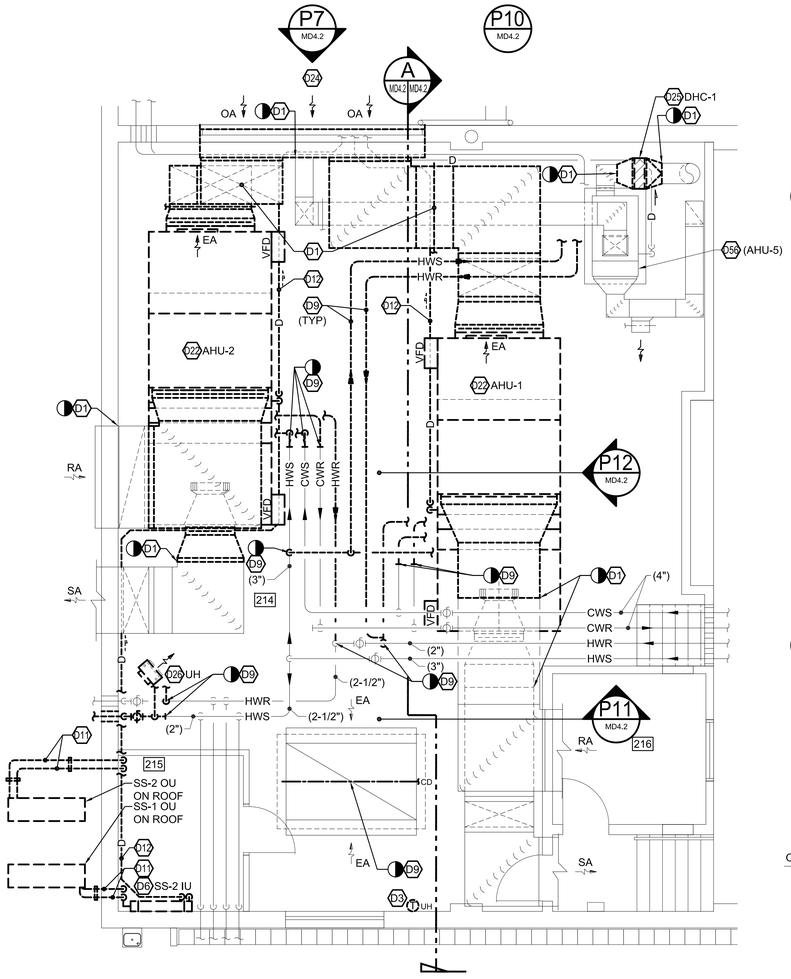


PHOTO 10 - OVERHEAD VIEW OF OUTDOOR AIR INTAKE LOUVER AND POTENTIAL CRANE LOCATION.
P10 MD4.2 NOT TO SCALE

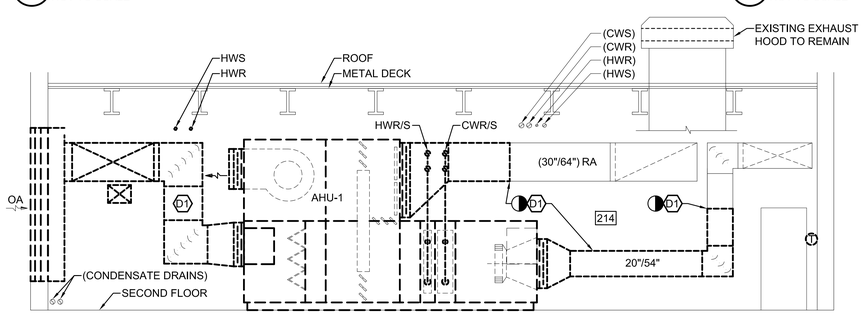


P11 MD4.2 PHOTO 11 - MECHANICAL MEZZANINE EXISTING CONDITIONS.
NOT TO SCALE

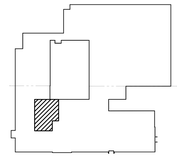
P12 MD4.2 PHOTO 12 - MECHANICAL MEZZANINE EXISTING CONDITIONS.
NOT TO SCALE



ENLARGED SECOND FLOOR PLAN - MECHANICAL ROOM - DEMOLITION
SCALE: 1/4" = 1'-0"



A MD4.2 SECTION
SCALE: 1/4" = 1'-0"



KEY PLAN
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TRUE NORTH

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TELEPHONE: (757) 599-6455 PROJECT NUMBER: 21-156

HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
ENLARGED FLOOR PLANS - MECHANICAL - DEMOLITION

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO:	21-156
DESIGNED BY:	CEP
DRAWN BY:	SLS
CHECKED BY:	KDA

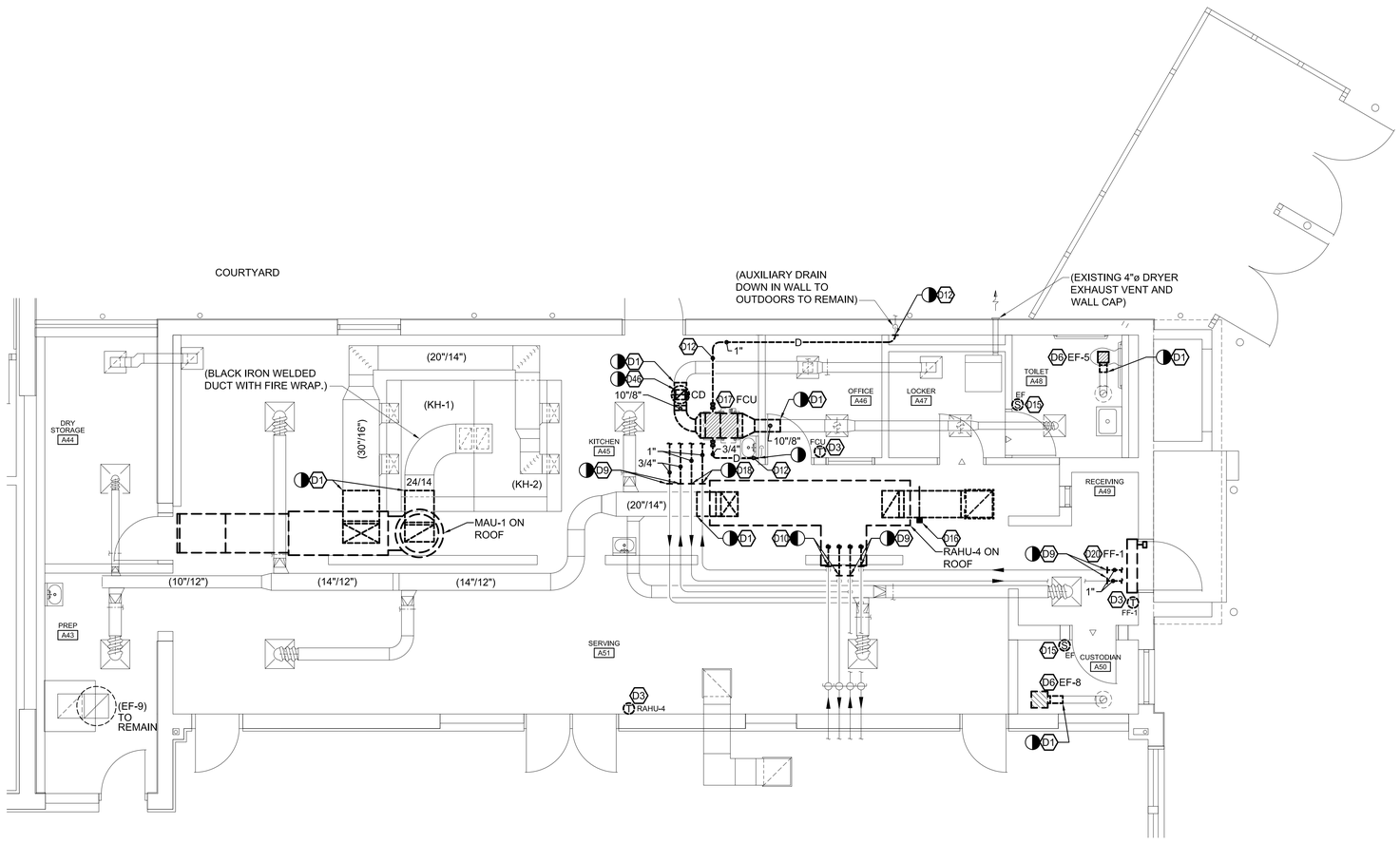
MD4.2

DATE: 12/20/2024

DEMOLITION NOTES ⬡	
NO.	DESCRIPTION
D1	DISCONNECT AND REMOVE EXISTING DUCTWORK TO EXTENT REQUIRED TO FACILITATE INSTALLATION OF NEW WORK. COVER AND PROTECT DUCTWORK OPENING DURING CONSTRUCTION. PROVIDE TEMPORARY SUPPORTS FOR REMAINING DUCTWORK WHERE REMOVAL OF CONNECTED UNIT REQUIRES.
D3	REMOVE THERMOSTAT/TEMPERATURE SENSOR, WIRING, AND ACCESSORIES COMPLETE.
D6	REMOVE EXHAUST FAN, SUPPORTS, ACCESSORIES, AND CONTROLS COMPLETE.
D9	ISOLATE UNIT FROM HWR/S PIPING, DISCONNECT AND REMOVE HWR/S PIPING, SUPPORTS, AND ACCESSORIES COMPLETE TO INCLUDE VAV BOX VALVE PACKAGE AND BRANCH PIPING.
D10	ISOLATE ROOFTOP UNIT FROM CWR/S PIPING. DISCONNECT UNIT FROM CWR/S PIPING AND REMOVE PIPING TO THE EXTENT REQUIRED FOR INSTALLATION OF THE NEW WORK.
D12	REMOVE DRAIN PIPING, ACCESSORIES, AND SUPPORTS COMPLETE TO POINT INDICATED.
D15	REMOVE FAN SWITCH, WIRING, AND ACCESSORIES COMPLETE.
D16	DISCONNECT AND REMOVE EXISTING SMOKE DETECTOR. REFER TO ELECTRICAL DRAWINGS FOR FURTHER DETAILS
D17	REMOVE FAN COIL UNIT, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
D18	ISOLATE FAN COIL UNIT FROM CWR/S PIPING. DISCONNECT FAN COIL UNIT AND REMOVE PIPING TO THE EXTENT REQUIRED FOR THE INSTALLATION OF THE NEW WORK.
D20	REMOVE FLY FAN, SUPPORTS, ACCESSORIES, AND CONTROLS COMPLETE.
D46	REMOVE OUTDOOR AIR INTAKE DUCTWORK UP TO INTAKE HOOD CONNECTION. REMOVE CONTROL DAMPER.

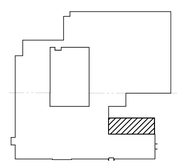
NOTE: EXISTING CONDITIONS ILLUSTRATED HAVE BEEN DETERMINED FROM ORIGINAL CONSTRUCTION DOCUMENTS AND LIMITED NON-INVASIVE FIELD INVESTIGATION. THE CONTRACTOR SHALL INVESTIGATE FIELD CONDITIONS PRIOR TO COMMENCEMENT OF WORK, COORDINATE AND MAKE ADJUSTMENTS AS NECESSARY.

NOTE: SEAL ALL EXISTING MEDIUM PRESSURE DUCTWORK USING AEROSEAL OR APPROVED EQUAL. SEE SPECIFICATION 230100 FOR ADDITION INFORMATION.



ENLARGED FLOOR PLAN - KITCHEN - MECHANICAL - DEMOLITION

SCALE: 1/4" = 1'-0"



KEY PLAN

NOT TO SCALE

TRUE NORTH

COMMONWEALTH OF VIRGINIA
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Lic. No. 023349
12/20/2024
PROFESSIONAL ENGINEER

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS
VIRGINIA

ENLARGED FLOOR PLANS - MECHANICAL - DEMOLITION

REVISIONS

MARK	DESCRIPTION	DATE

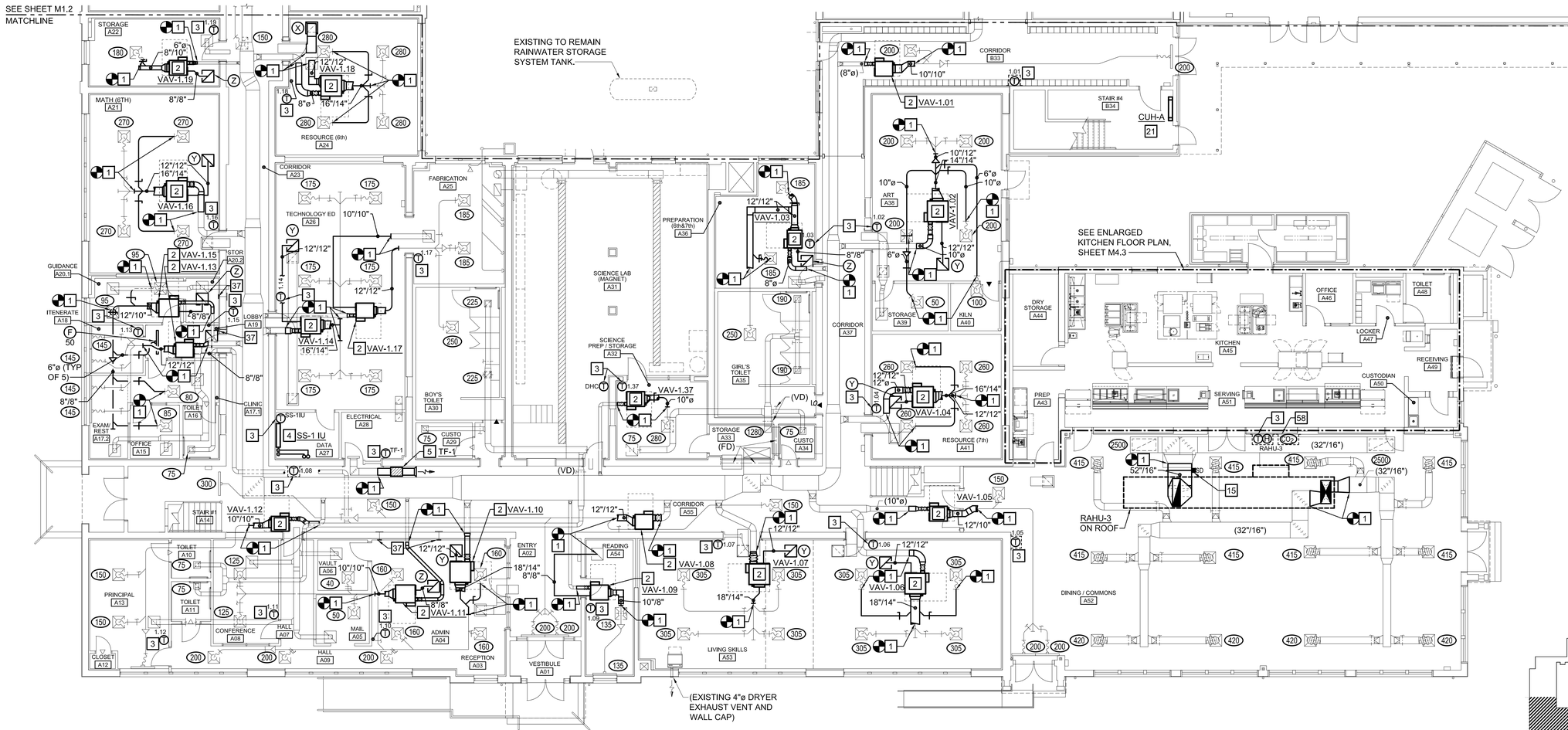
COMM. NO:	21-156
DESIGNED BY:	CEP
DRAWN BY:	SLS
CHECKED BY:	KDA

MD4.3

DATE: 12/20/2024

NEW WORK NOTES ☐	
NO.	DESCRIPTION
1	PROVIDE AND INSTALL DUCTWORK, INSULATION, AND SUPPORTS COMPLETE TO POINT INDICATED. RECONNECT TO EXISTING DUCTWORK.
2	PROVIDE AND INSTALL VARIABLE AIR VOLUME TERMINAL BOX, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
3	PROVIDE AND INSTALL THERMOSTAT/TEMPERATURE SENSOR, WIRING, AND ACCESSORIES COMPLETE. WHERE INDICATED, PROVIDE AND INSTALL LOCKABLE CLEAR PLASTIC COVER.
5	PROVIDE AND INSTALL EXHAUST FAN, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
15	REFER TO ELECTRICAL DRAWINGS FOR SMOKE DETECTOR INSTALLATION REQUIREMENTS.
21	PROVIDE AND INSTALL UNIT HEATER, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
37	CAP DUCTWORK THROUGH WALL AT WALL FACE.
58	PROVIDE AND INSTALL CARBON DIOXIDE SENSOR, HUMIDITY SENSOR, WIRING, AND CONTROLS COMPLETE.

NOTE: PRESSURE TEST ALL EXISTING MEDIUM PRESSURE DUCTWORK PER SPECIFICATION SECTION 230500.



PARTIAL FIRST FLOOR PLAN - AREA "A" - MECHANICAL - NEW WORK

SCALE: 1/8" = 1'-0"

KEY PLAN
NOT TO SCALE

TRUE NORTH

COMMONWEALTH OF VIRGINIA
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS
VIRGINIA
PARTIAL FIRST FLOOR PLAN - AREA "A" - MECHANICAL - NEW WORK

REVISIONS

MARK	DESCRIPTION	DATE

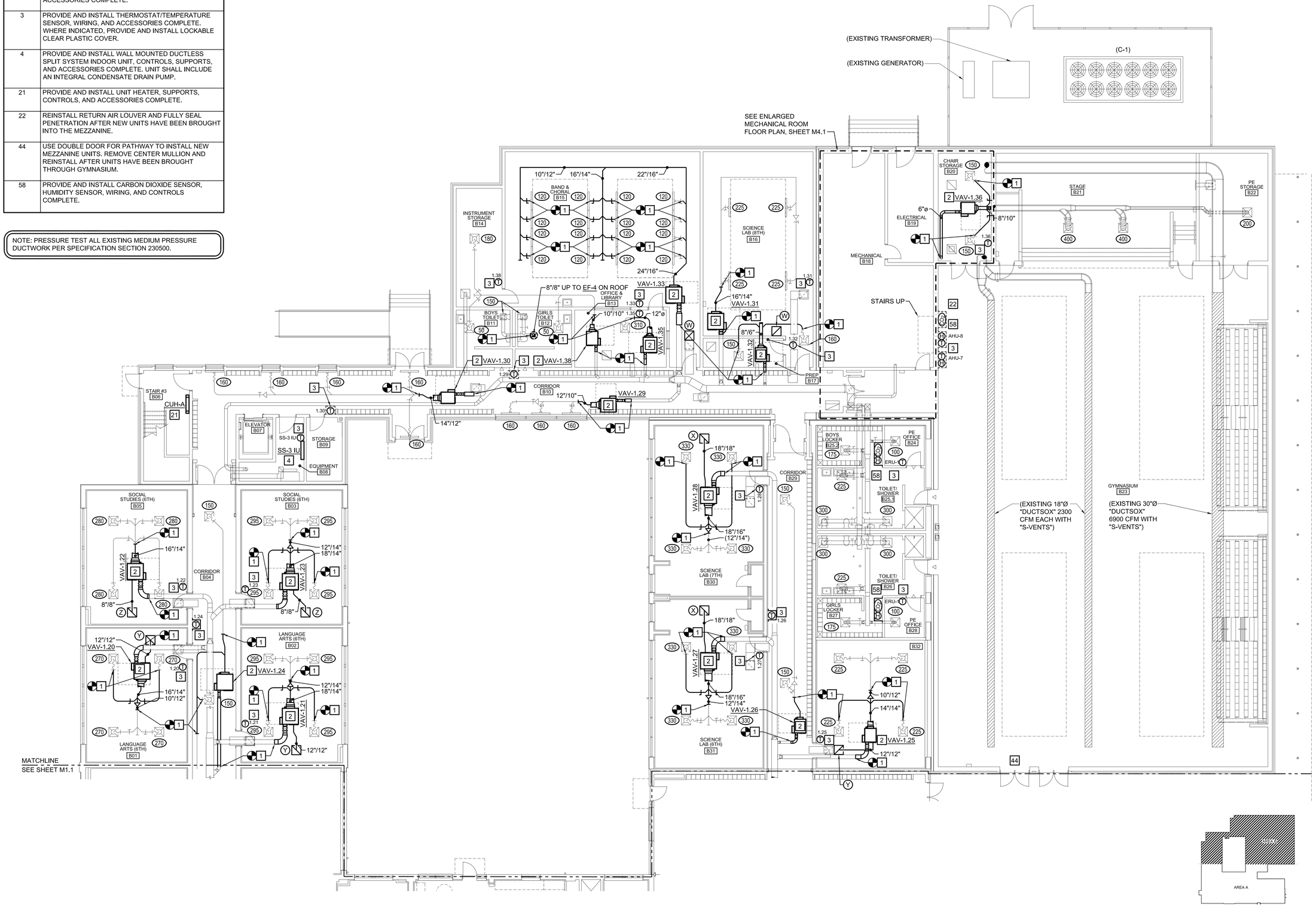
COMM. NO:	21-156
DESIGNED BY:	CEP
DRAWN BY:	SLS
CHECKED BY:	KDA

M1.1

DATE: 12/20/2024

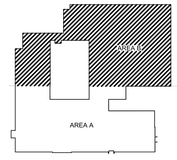
NEW WORK NOTES ☐	
NO.	DESCRIPTION
1	PROVIDE AND INSTALL DUCTWORK, INSULATION, AND SUPPORTS COMPLETE TO POINT INDICATED. RECONNECT TO EXISTING DUCTWORK.
2	PROVIDE AND INSTALL VARIABLE AIR VOLUME TERMINAL BOX, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
3	PROVIDE AND INSTALL THERMOSTAT/TEMPERATURE SENSOR, WIRING, AND ACCESSORIES COMPLETE. WHERE INDICATED, PROVIDE AND INSTALL LOCKABLE CLEAR PLASTIC COVER.
4	PROVIDE AND INSTALL WALL MOUNTED DUCTLESS SPLIT SYSTEM INDOOR UNIT, CONTROLS, SUPPORTS, AND ACCESSORIES COMPLETE. UNIT SHALL INCLUDE AN INTEGRAL CONDENSATE DRAIN PUMP.
21	PROVIDE AND INSTALL UNIT HEATER, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
22	REINSTALL RETURN AIR LOUVER AND FULLY SEAL PENETRATION AFTER NEW UNITS HAVE BEEN BROUGHT INTO THE MEZZANINE.
44	USE DOUBLE DOOR FOR PATHWAY TO INSTALL NEW MEZZANINE UNITS. REMOVE CENTER MULLION AND REINSTALL AFTER UNITS HAVE BEEN BROUGHT THROUGH GYMNASIUM.
58	PROVIDE AND INSTALL CARBON DIOXIDE SENSOR, HUMIDITY SENSOR, WIRING, AND CONTROLS COMPLETE.

NOTE: PRESSURE TEST ALL EXISTING MEDIUM PRESSURE DUCTWORK PER SPECIFICATION SECTION 230500.



PARTIAL FIRST FLOOR PLAN - AREA "B" - MECHANICAL - NEW WORK

SCALE: 1/8" = 1'-0"



KEY PLAN
NOT TO SCALE

COMMONWEALTH OF VIRGINIA
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
PARTIAL FIRST FLOOR PLAN - AREA "B" - MECHANICAL - NEW WORK

REVISIONS

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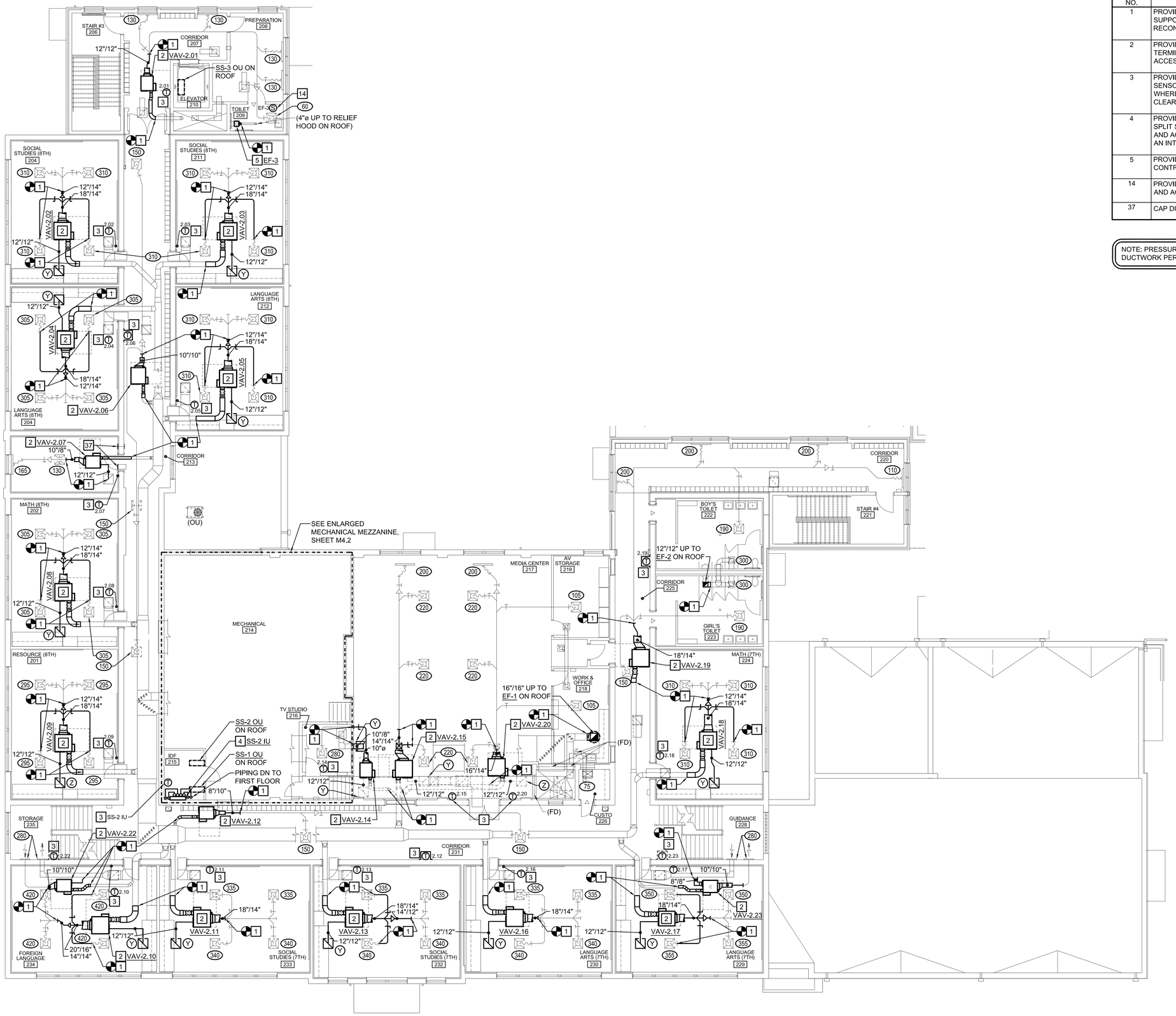
COMM. NO:	21-156
DESIGNED BY:	CEP
DRAWN BY:	SLS
CHECKED BY:	KDA

M1.2

DATE: 12/20/2024



SECOND FLOOR PLAN - AREA "A" - MECHANICAL - NEW WORK

SCALE: 1/8" = 1'-0"

NEW WORK NOTES ☐	
NO.	DESCRIPTION
1	PROVIDE AND INSTALL DUCTWORK, INSULATION, AND SUPPORTS COMPLETE TO POINT INDICATED. RECONNECT TO EXISTING DUCTWORK.
2	PROVIDE AND INSTALL VARIABLE AIR VOLUME TERMINAL BOX, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
3	PROVIDE AND INSTALL THERMOSTAT/TEMPERATURE SENSOR, WIRING, AND ACCESSORIES COMPLETE. WHERE INDICATED, PROVIDE AND INSTALL LOCKABLE CLEAR PLASTIC COVER.
4	PROVIDE AND INSTALL WALL MOUNTED DUCTLESS SPLIT SYSTEM INDOOR UNIT, CONTROLS, SUPPORTS, AND ACCESSORIES COMPLETE. UNIT SHALL INCLUDE AN INTEGRAL CONDENSATE DRAIN PUMP.
5	PROVIDE AND INSTALL EXHAUST FAN, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
14	PROVIDE AND INSTALL EXHAUST FAN SWITCH, WIRING, AND ACCESSORIES COMPLETE.
37	CAP DUCTWORK THROUGH WALL AT WALL FACE.

NOTE: PRESSURE TEST ALL EXISTING MEDIUM PRESSURE DUCTWORK PER SPECIFICATION SECTION 230500.

KEY PLAN
NOT TO SCALE

TRUE NORTH

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
SECOND FLOOR PLAN - AREA "A" - MECHANICAL - NEW WORK

REVISIONS

MARK	DESCRIPTION	DATE

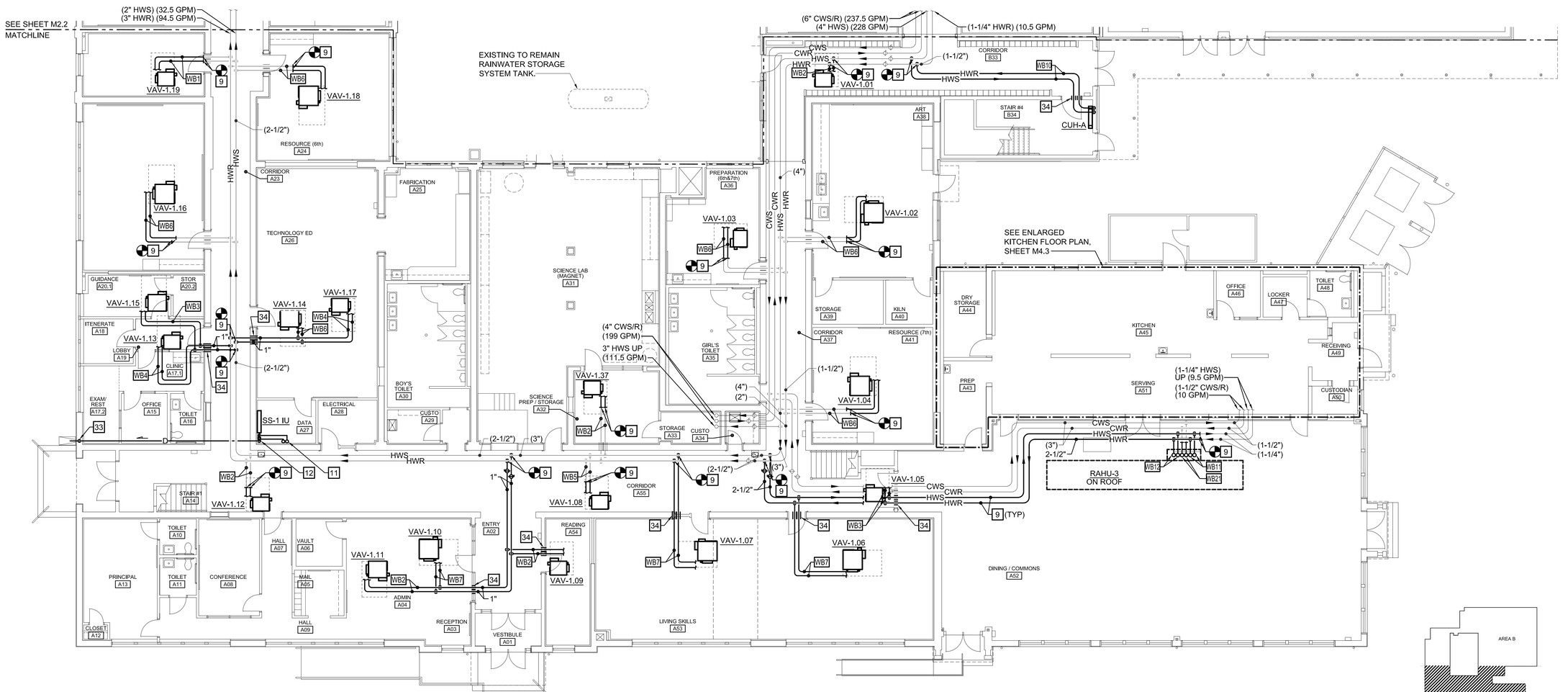
COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: SLS
CHECKED BY: KDA

M1.3

DATE: 12/20/2024

NEW WORK NOTES	
NO.	DESCRIPTION
9	PROVIDE AND INSTALL HWR/S PIPING, VALVE PACKAGES, SUPPORTS, AND ACCESSORIES COMPLETE. CONNECT TO NEW EQUIPMENT AND RECONNECT TO EXISTING ISOLATED PIPING. CHECK VICTAULIC CONNECTIONS IN HWR/S PIPING THROUGHOUT BUILDING AS TEMPERATURE IS LOWERED. WHERE LEAK OCCURS, REMOVE FITTING AND REPLACE WITH WELD IN SPOOL PIECES. ALL NEW HWR/S PIPING SHALL BE WELDED.
11	PROVIDE AND INSTALL RG/RL PIPING, INSULATION, SUPPORTS, AND ACCESSORIES COMPLETE. REFER TO "ROOF MOUNTED PIPING SUPPORT DETAIL" ON DRAWING M6.1 AND "REFRIGERANT PIPING ROOF PENETRATION DETAIL" ON DRAWING M6.2.
12	PROVIDE AND INSTALL CONDENSATE DRAIN PIPING AND SUPPORTS COMPLETE. FOLLOW EXISTING DRAIN ROUTE TO NEAREST FLOOR DRAIN, ROOF DRAIN, OR SPLASH BLOCK AS INDICATED.
33	TURN DRAIN PIPING DOWN IN EXTERIOR WALL, FOLLOWING EXISTING PIPING PATH TO EXTERIOR SPLASH BLOCK.
34	PROVIDE AND INSTALL PIPE SLEEVES IN EXISTING WALL PENETRATION EXPANDED FOR LARGER PIPE SIZE. PIPE PENETRATION FIRE RATING SHALL MATCH RATING OF WALL.

WATER BALANCE NOTES	
NO.	DESCRIPTION
WB1	3/4" HWR/S (0.5 GPM)
WB2	3/4" HWR/S (1.0 GPM)
WB3	3/4" HWR/S (1.5 GPM)
WB4	3/4" HWR/S (2.0 GPM)
WB5	3/4" HWR/S (2.5 GPM)
WB6	3/4" HWR/S (3.0 GPM)
WB7	1" HWR/S (3.5 GPM)
WB10	1" HWR/S (5.0 GPM)
WB11	1-1/4" HWR/S (12.5 GPM)
WB12	1-1/2" HWR/S (15.0 GPM)
WB21	2" CWR/S (28.5 GPM)



PARTIAL FIRST FLOOR PLAN - AREA "A" - PIPING - NEW WORK

SCALE: 1/8" = 1'-0"

KEY PLAN

NOT TO SCALE

TRUE NORTH

COMMONWEALTH OF VIRGINIA
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
PARTIAL FIRST FLOOR PLAN - AREA "A" - PIPING - NEW WORK

REVISIONS

MARK	DESCRIPTION	DATE

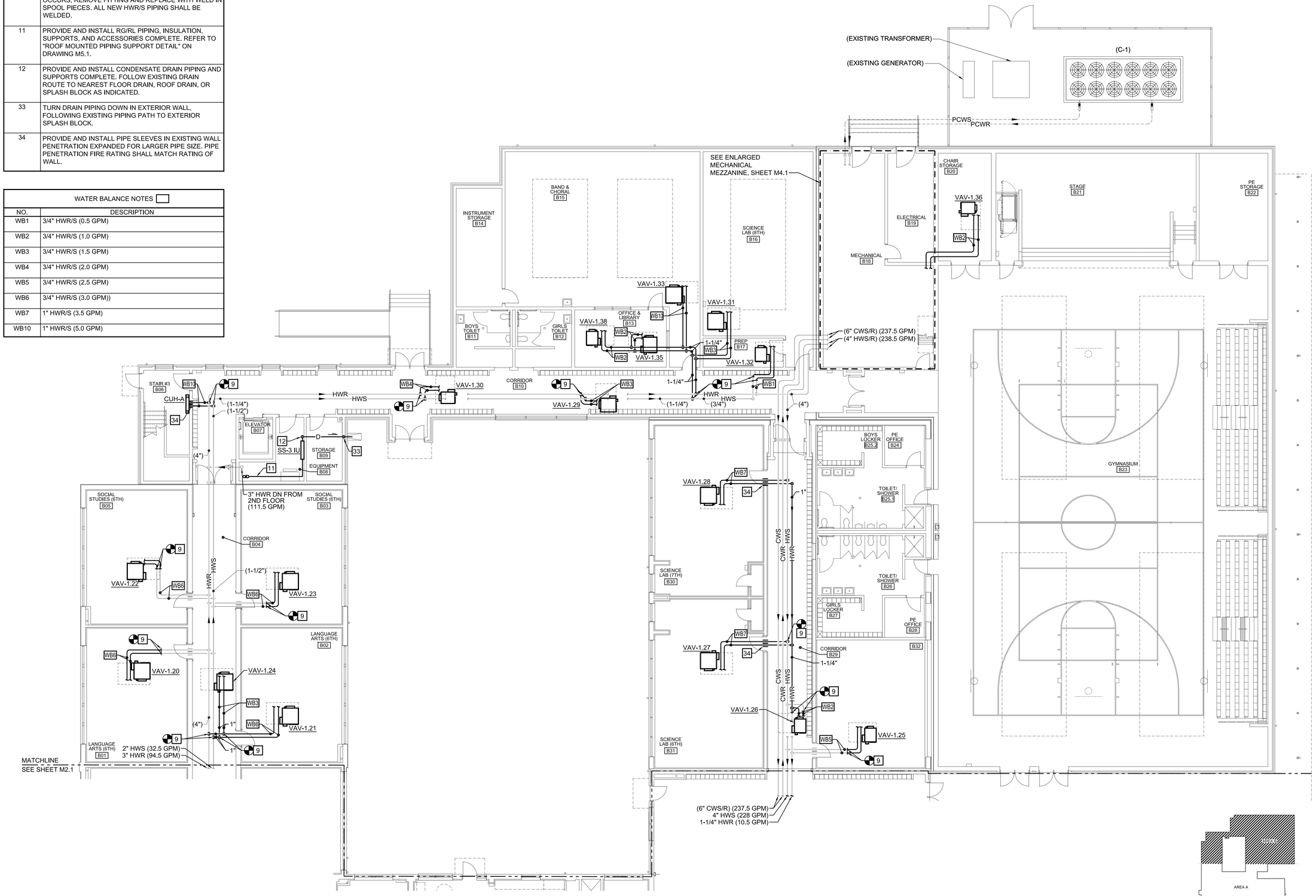
COMM. NO:	21-156
DESIGNED BY:	CEP
DRAWN BY:	SLS
CHECKED BY:	KDA

M2.1

DATE: 12/20/2024

NEW WORK NOTES	
NO.	DESCRIPTION
9	PROVIDE AND INSTALL HWR/S PIPING, VALVE PACKAGES, SUPPORTS, AND ACCESSORIES COMPLETE. CONNECT TO NEW EQUIPMENT AND RECONNECT TO EXISTING ISOLATED PIPING. CHECK VICTAULIC CONNECTIONS IN HWR/S PIPING THROUGHOUT BUILDING AS TEMPERATURE IS LOWERED. WHERE LEAK OCCURS, REMOVE FITTING AND REPLACE WITH WELD IN SPOOL PIECES. ALL NEW HWR/S PIPING SHALL BE WELDED.
11	PROVIDE AND INSTALL RG/RL PIPING, INSULATION, SUPPORTS, AND ACCESSORIES COMPLETE. REFER TO "ROOF MOUNTED PIPING SUPPORT DETAIL" ON DRAWING M5.1.
12	PROVIDE AND INSTALL CONDENSATE DRAIN PIPING AND SUPPORTS COMPLETE. FOLLOW EXISTING DRAIN ROUTE TO NEAREST FLOOR DRAIN, ROOF DRAIN, OR SPLASH BLOCK AS INDICATED.
33	TURN DRAIN PIPING DOWN IN EXTERIOR WALL, FOLLOWING EXISTING PIPING PATH TO EXTERIOR SPLASH BLOCK.
34	PROVIDE AND INSTALL PIPE SLEEVES IN EXISTING WALL PENETRATION EXPANDED FOR LARGER PIPE SIZE. PIPE PENETRATION FIRE RATING SHALL MATCH RATING OF WALL.

WATER BALANCE NOTES	
NO.	DESCRIPTION
WB1	3/4" HWR/S (0.5 GPM)
WB2	3/4" HWR/S (1.0 GPM)
WB3	3/4" HWR/S (1.5 GPM)
WB4	3/4" HWR/S (2.0 GPM)
WB5	3/4" HWR/S (2.5 GPM)
WB6	3/4" HWR/S (3.0 GPM))
WB7	1" HWR/S (3.5 GPM)
WB10	1" HWR/S (5.0 GPM)

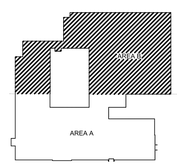


PARTIAL FIRST FLOOR PLAN - AREA "B" - PIPING - NEW WORK

SCALE: 1/8" = 1'-0"

KEY PLAN

NOT TO SCALE



COMMONWEALTH OF VIRGINIA
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
PARTIAL FIRST FLOOR PLAN - AREA "B" - PIPING - NEW WORK

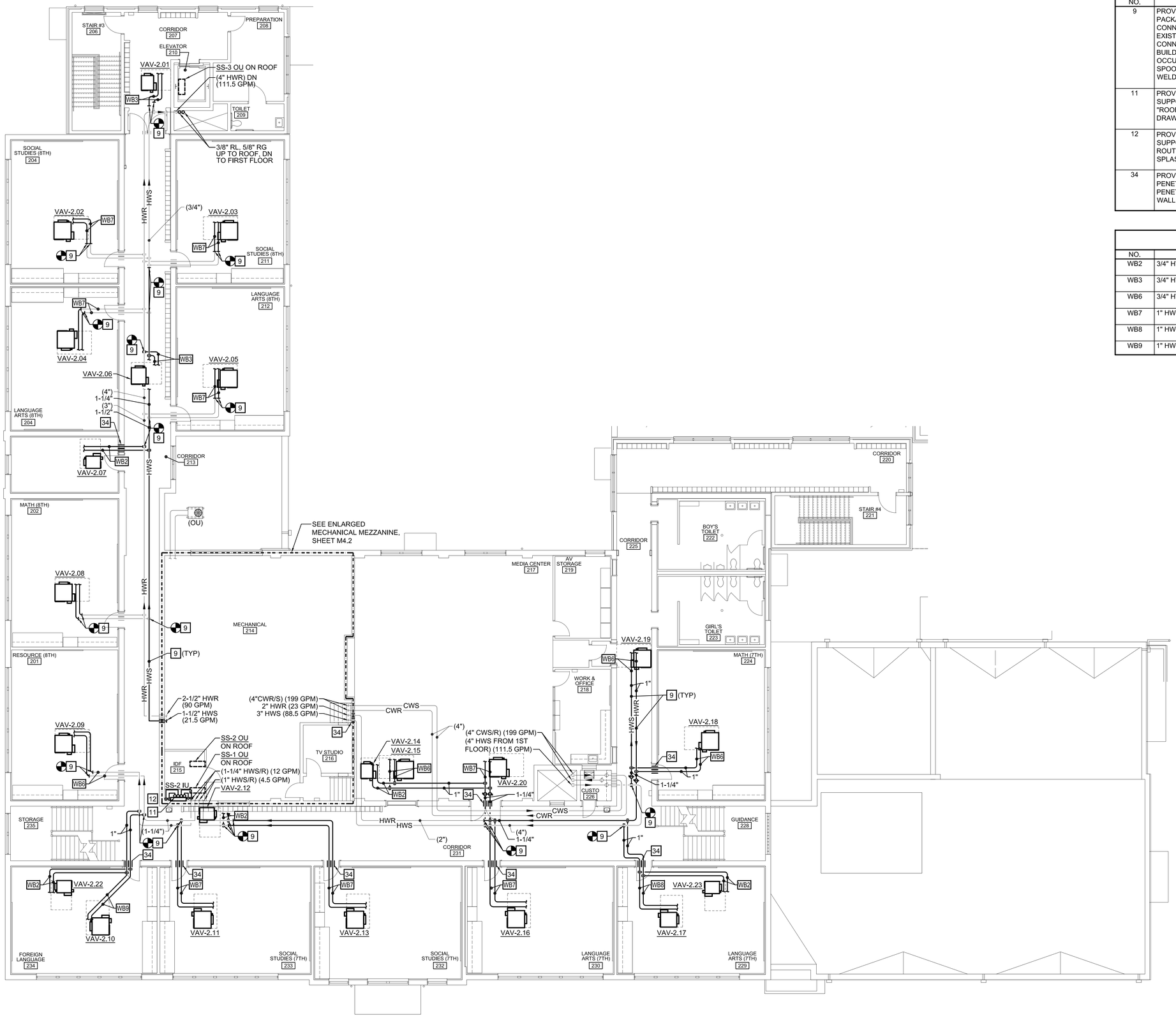
REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: SLS
CHECKED BY: KDA

M2.2

DATE: 12/20/2024



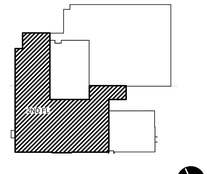
SECOND FLOOR PLAN - AREA "A" - PIPING - NEW WORK

SCALE: 1/8" = 1'-0"

NEW WORK NOTES ☐	
NO.	DESCRIPTION
9	PROVIDE AND INSTALL HWR/S PIPING, VALVE PACKAGES, SUPPORTS, AND ACCESSORIES COMPLETE. CONNECT TO NEW EQUIPMENT AND RECONNECT TO EXISTING ISOLATED PIPING. CHECK VICTAULIC CONNECTIONS IN HWR/S PIPING THROUGHOUT BUILDING AS TEMPERATURE IS LOWERED. WHERE LEAK OCCURS, REMOVE FITTING AND REPLACE WITH WELD IN SPOOL PIECES. ALL NEW HWR/S PIPING SHALL BE WELDED.
11	PROVIDE AND INSTALL RG/RL PIPING, INSULATION, SUPPORTS, AND ACCESSORIES COMPLETE. REFER TO "ROOF MOUNTED PIPING SUPPORT DETAIL" ON DRAWING M5.1.
12	PROVIDE AND INSTALL CONDENSATE DRAIN PIPING AND SUPPORTS COMPLETE. FOLLOW EXISTING DRAIN ROUTE TO NEAREST FLOOR DRAIN, ROOF DRAIN, OR SPLASH BLOCK AS INDICATED.
34	PROVIDE AND INSTALL PIPE SLEEVES IN EXISTING WALL PENETRATION EXPANDED FOR LARGER PIPE SIZE. PIPE PENETRATION FIRE RATING SHALL MATCH RATING OF WALL.

WATER BALANCE NOTES ☐	
NO.	DESCRIPTION
WB2	3/4" HWR/S (1.0 GPM)
WB3	3/4" HWR/S (1.5 GPM)
WB6	3/4" HWR/S (3.0 GPM)
WB7	1" HWR/S (3.5 GPM)
WB8	1" HWR/S (4.0 GPM)
WB9	1" HWR/S (4.5 GPM)

KEY PLAN
NOT TO SCALE



TRUE NORTH

COMMONWEALTH OF VIRGINIA
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA

SECOND FLOOR PLAN - AREA "A" - PIPING - NEW WORK

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
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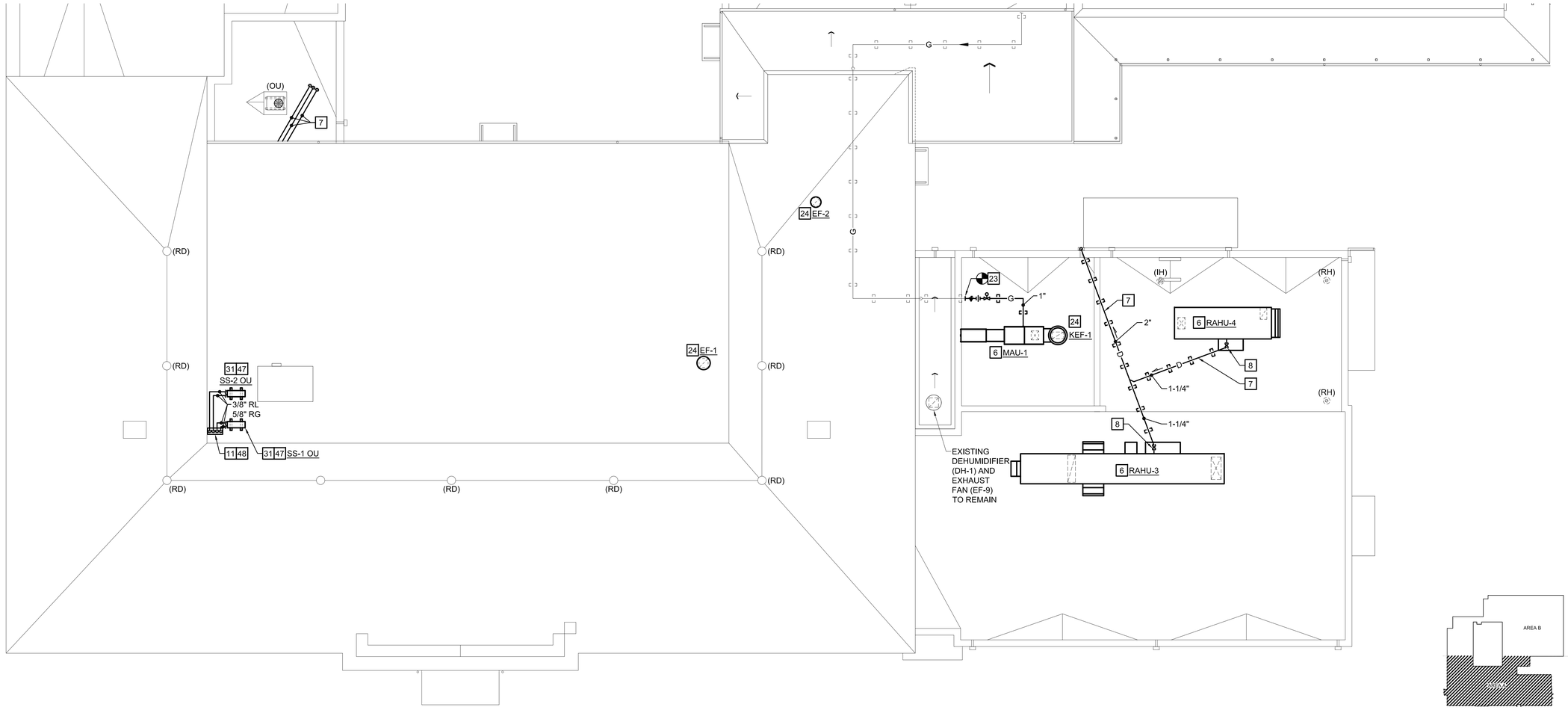
CHECKED BY: KDA

M2.3

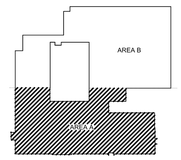
DATE: 12/20/2024

NEW WORK NOTES ☐	
NO.	DESCRIPTION
6	PROVIDE AND INSTALL ROOFTOP UNIT, CONTROLS, AND ACCESSORIES COMPLETE ON EXISTING ROOF CURB. PROVIDE AND INSTALL ADAPTER CURB AS REQUIRED. CONTRACTOR TO VERIFY EXISTING CURB AND NEW UNIT DIMENSIONS PRIOR TO PURCHASE OF ADAPTER CURB. ROOFTOP UNIT DIMENSIONS CUSTOMIZED FOR CLOSEST FIT POSSIBLE ON EXISTING CURB.
7	PROVIDE AND INSTALL CONDENSATE DRAIN PIPING AND SUPPORTS COMPLETE. ROUTE TO NEAREST ROOF DRAIN, GUTTER, OR DOWNSPOUT. REFER TO "ROOF MOUNTED PIPING SUPPORT DETAIL" ON DRAWING M5.1.
8	REFER TO "COIL CONDENSATE TRAP DETAIL" ON DRAWING M5.1.
11	PROVIDE AND INSTALL RG/RL PIPING, INSULATION, SUPPORTS, AND ACCESSORIES COMPLETE. REFER TO "ROOF MOUNTED PIPING SUPPORT DETAIL" ON DRAWING M5.1.
23	PROVIDE AND INSTALL GAS PIPING, SUPPORTS, AND ACCESSORIES COMPLETE. REFER TO "ROOF MOUNTED PIPING SUPPORT DETAIL" ON DRAWING M5.1.
24	PROVIDE AND INSTALL ROOF MOUNTED EXHAUST FAN, ACCESSORIES, AND CONTROLS COMPLETE. MOUNT ON EXISTING ROOF CURB AND EXTEND DUCTWORK OR PROVIDE CURB ADAPTER AS REQUIRED.
31	PROVIDE AND INSTALL SPLIT SYSTEM OUTDOOR CONDENSING UNIT, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE. REFER TO "TYPICAL CONDENSING UNIT CURB DETAIL" ON DRAWING M5.2. CONTRACTOR SHALL CUT EXISTING ROOF AND PROVIDE FLASHING FOR NEW CONDENSING UNIT CURBS. REFER TO "ROOF CURB FLASHING DETAIL" ON DRAWING M5.1.
47	REFER TO ELECTRICAL DRAWINGS FOR MOUNTING OF DISCONNECT AND RECEPTACLE TO NEW STRUCTURE. DO NOT MOUNT ON UNITS.
48	CUT NEW OPENING FOR PIPE PORTAL SYSTEM. REFER TO "REFRIGERANT PIPING AND POWER THROUGH ROOF DETAIL" ON DRAWING M5.2.



PARTIAL ROOF PLAN - AREA "A" - MECHANICAL - NEW WORK

SCALE: 1/8" = 1'-0"



KEY PLAN

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS
VIRGINIA
PARTIAL ROOF PLAN - AREA "A" - MECHANICAL - NEW WORK

REVISIONS

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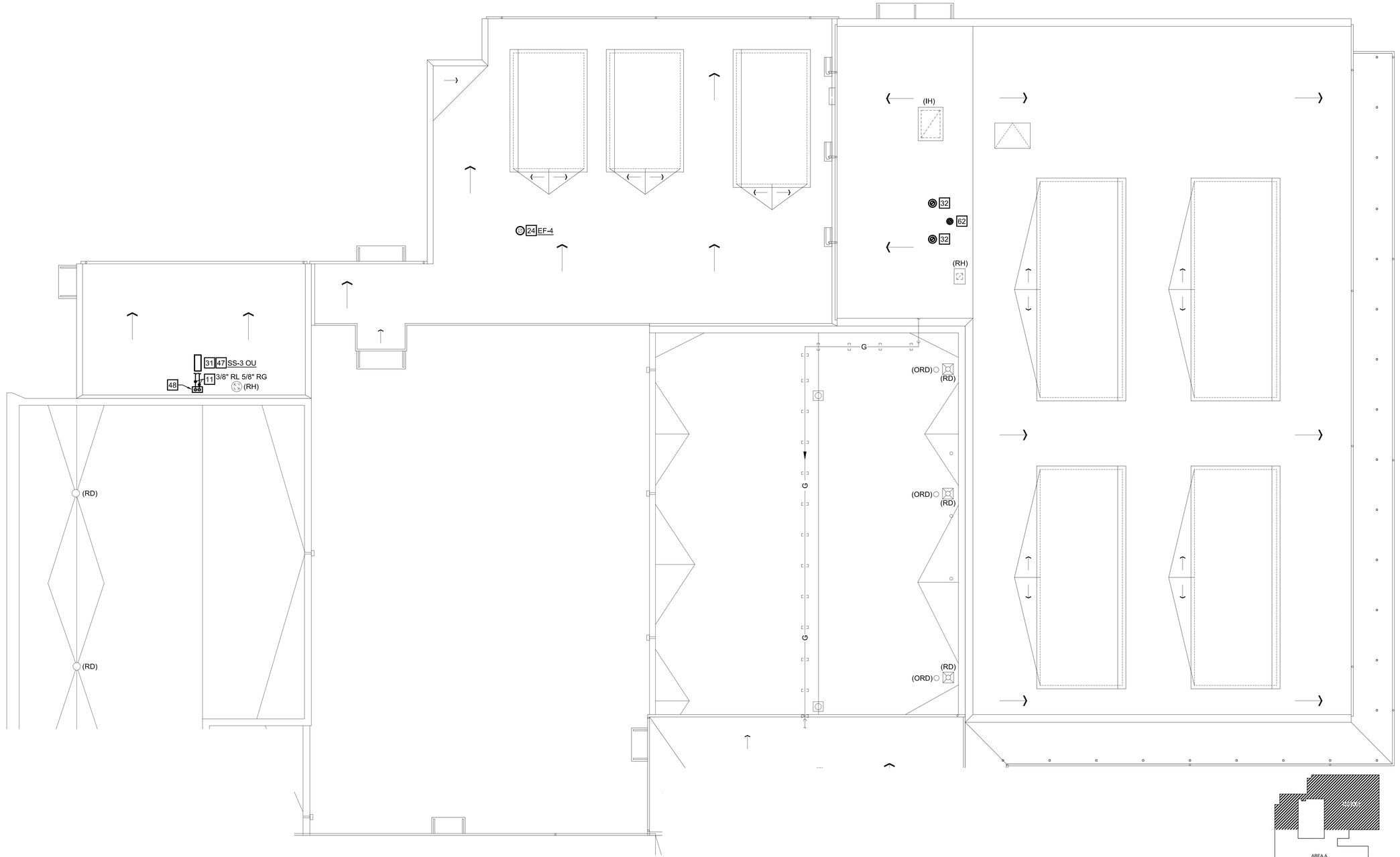
COMM. NO:	21-156
DESIGNED BY:	CEP
DRAWN BY:	SLS
CHECKED BY:	KDA

M3.1

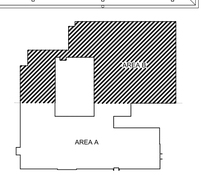
DATE: 12/20/2024

NEW WORK NOTES	
NO.	DESCRIPTION
11	PROVIDE AND INSTALL RG/RL PIPING, INSULATION, SUPPORTS, AND ACCESSORIES COMPLETE. REFER TO "ROOF MOUNTED PIPING SUPPORT DETAIL" ON DRAWING M5.1.
24	PROVIDE AND INSTALL ROOF MOUNTED EXHAUST FAN, ACCESSORIES, AND CONTROLS COMPLETE. MOUNT ON EXISTING ROOF CURB AND EXTEND DUCTWORK OR PROVIDE CURB ADAPTER AS REQUIRED.
31	PROVIDE AND INSTALL SPLIT SYSTEM OUTDOOR CONDENSING UNIT, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE. REFER TO "TYPICAL CONDENSING UNIT CURB DETAIL" ON DRAWING M5.2. CONTRACTOR SHALL CUT EXISTING ROOF AND PROVIDE FLASHING FOR NEW CONDENSING UNIT CURBS. REFER TO "ROOF CURB FLASHING DETAIL" ON DRAWING M5.1.

NEW WORK NOTES	
NO.	DESCRIPTION
32	PROVIDE AND INSTALL BOILER STACK CAP, FLUE PIPE, AND FLASHING COMPLETE. REFER TO "BOILER VENT FLUE THROUGH ROOF DETAIL" ON DRAWING M5.3.
47	REFER TO ELECTRICAL DRAWINGS FOR MOUNTING OF DISCONNECT AND RECEPTACLE TO NEW STRUCTURE. DO NOT MOUNT ON UNITS.
48	CUT NEW OPENING FOR PIPE PORTAL SYSTEM. REFER TO "REFRIGERANT PIPING AND POWER THROUGH ROOF DETAIL" ON DRAWING M5.2.
62	PROVIDE AND INSTALL DOMESTIC WATER HEATER EXHAUST CAP, FLUE PIPE, AND FLASHING COMPLETE. SIMILAR TO "BOILER VENT FLUE THROUGH ROOF DETAIL" ON DRAWING M5.3. REFER TO PLUMBING DRAWINGS FOR MORE DETAILS AND DRAWING P1.1 FOR EXHAUST PIPE CONTINUATION.



PARTIAL ROOF PLAN - AREA "B" - MECHANICAL - NEW WORK
SCALE: 1/8" = 1'-0"



KEY PLAN
NOT TO SCALE

TRUE NORTH

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KEVIN D. ALLEN
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS
VIRGINIA
PARTIAL ROOF PLAN - AREA "B" - MECHANICAL - NEW WORK

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO:	21-156
DESIGNED BY:	CEP
DRAWN BY:	SLS
CHECKED BY:	KDA

M3.2

DATE: 12/20/2024

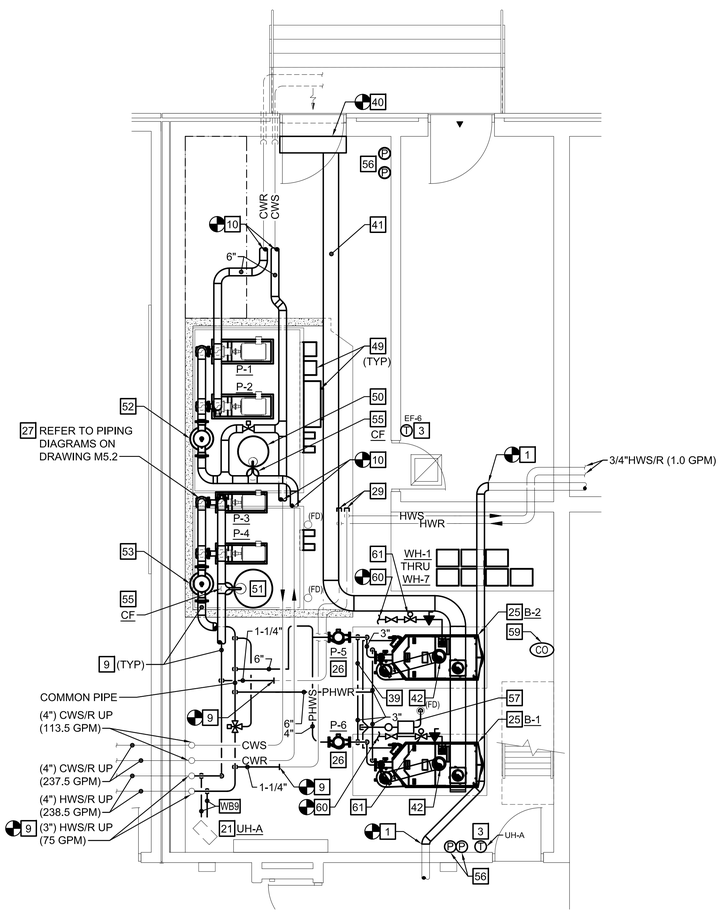
NEW WORK NOTES ☐	
NO.	DESCRIPTION
1	PROVIDE AND INSTALL DUCTWORK, INSULATION, AND SUPPORTS COMPLETE TO POINT INDICATED. RECONNECT TO EXISTING DUCTWORK.
3	PROVIDE AND INSTALL THERMOSTAT/TEMPERATURE SENSOR, WIRING, AND ACCESSORIES COMPLETE. WHERE INDICATED, PROVIDE AND INSTALL LOCKABLE CLEAR PLASTIC COVER.
5	PROVIDE AND INSTALL EXHAUST FAN, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
8	REFER TO "COIL CONDENSATE TRAP DETAIL" ON DRAWING M6.1.
9	PROVIDE AND INSTALL HWR/S PIPING, VALVE PACKAGES, SUPPORTS, AND ACCESSORIES COMPLETE. CONNECT TO NEW EQUIPMENT AND RECONNECT TO EXISTING ISOLATED PIPING. CHECK VICTAULIC CONNECTIONS IN HWR/S PIPING THROUGHOUT BUILDING AS TEMPERATURE IS LOWERED. WHERE LEAK OCCURS, REMOVE FITTING AND REPLACE WITH WELD IN SPOOL PIECES. ALL NEW HWR/S PIPING SHALL BE WELDED.
10	PROVIDE AND INSTALL CWR/S PIPING, VALVE PACKAGES, SUPPORTS, AND ACCESSORIES COMPLETE. CONNECT TO NEW EQUIPMENT AND RECONNECT TO EXISTING ISOLATED PIPING.
12	PROVIDE AND INSTALL CONDENSATE DRAIN PIPING AND SUPPORTS COMPLETE. FOLLOW EXISTING DRAIN ROUTE TO NEAREST FLOOR DRAIN, ROOF DRAIN, OR SPLASH BLOCK AS INDICATED.
18	PROVIDE AND INSTALL MEZZANINE AIR HANDLING UNIT OR ENERGY RECOVERY UNIT, CONTROLS, AND ACCESSORIES COMPLETE. PROVIDE UNIT WITH BASERAIL AND MOUNT ON EXISTING HOUSEKEEPING PAD.

NEW WORK NOTES ☐	
NO.	DESCRIPTION
21	PROVIDE AND INSTALL UNIT HEATER, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
22	REINSTALL RETURN AIR LOUVER AND FULLY SEAL PENETRATION AFTER NEW UNITS HAVE BEEN BROUGHT INTO THE MEZZANINE.
25	PROVIDE AND INSTALL CONDENSING BOILER, FLUE PIPING, CONTROLS, AND ACCESSORIES COMPLETE. PROVIDE AND INSTALL NEOPRENE ISOLATION PADS FOR BOILER MOUNTING ON HOUSEKEEPING PAD. REFER TO "BOILER VENTING DETAIL" ON DRAWING M5.2.
26	PROVIDE AND INSTALL INLINE PUMPS, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE. REFER TO "BASE MOUNTED END SUCTION PUMP PIPING DETAIL" ON DRAWING M5.1.
27	PROVIDE AND INSTALL NEW PUMPS, VFDS, CONTROLS, AND ALL OTHER ACCESSORIES COMPLETE ON EXISTING PUMP PACKAGE BASE. NEW PUMP BASES SHALL BE GROUTED TO EXISTING PUMP PACKAGE BASE AFTER ALL CONCRETE HAS BEEN REPAIRED TO PROVIDE A SMOOTH SURFACE.
29	CAP EXISTING HWS/R PIPING WHERE INDICATED.
38	PROVIDE AND INSTALL EXTENSION OF 4" THICK HOUSKEEPING PAD. TIE INTO EXISTING PAD FOR A CONTINUOUS INSTALLATION. REFER TO "HOUSE KEEPING PAD DETAIL" ON DRAWING M 5.2.
39	BYPASS PIPING, VALVE NORMALLY CLOSED.
40	PROVIDE AND INSTALL PLENUM BOX AND SUPPORTS COMPLETE. CONNECT TO AND MATCH DIMENSIONS OF EXISTING LOUVER. EXTENDING BOX A MINIMUM OF 12" INTO THE MECHANICAL ROOM.
41	PROVIDE AND INSTALL 12" DIAMETER SCHEDULE 40 PVC PIPE, ACCESSORIES, AND SUPPORTS COMPLETE. PROVIDE AND INSTALL SEAL AROUND CONNECTION TO PLENUM BOX AND FLEXIBLE RUBBER PIPE COUPLING AT BOILER CONNECTION.

NEW WORK NOTES ☐	
NO.	DESCRIPTION
42	BOILER FLUE PIPE UP THROUGH EXISTING PENETRATIONS TO STACK CAP AT ROOF. REFER TO "BOILER VENT FLUE THROUGH ROOF DETAIL" ON DRAWING M5.2.
46	PROVIDE AND INSTALL NEW OUTDOOR AIR INTAKE DUCTWORK AND CONTROL DAMPER. CONNECT TO INTAKE HOOD CONNECTION AND EXISTING EXHAUST DUCTWORK AS INDICATED.
49	MOUNT VFDS AND CONTROL PANELS FOR NEW PUMPS ON EXISTING PUMP PACKAGE FRAMEWORK. REFER TO PHOTO 6 ON DRAWING MD4.1 FOR FRAMEWORK EXISTING CONDITIONS.
50	PROVIDE AND INSTALL NEW PRE-CHARGED BLADDER EXPANSION TANK WITH HEAVY DUTY REPLACEABLE BLADDER, RING BASE, LIFTING RINGS, AND NPT SYSTEM CONNECTION SIZED TO ACCEPT 106 GALLONS OF CHILLED WATER AT A MAXIMUM PRESSURE OF 125 PSI.
51	PROVIDE AND INSTALL NEW PRE-CHARGED BLADDER EXPANSION TANK WITH HEAVY DUTY REPLACEABLE BLADDER, RING BASE, LIFTING RINGS, AND NPT SYSTEM CONNECTION SIZED TO ACCEPT 211 GALLONS OF HOT WATER AT A MAXIMUM PRESSURE OF 125 PSI.
52	PROVIDE AND INSTALL NEW AIR DIRT SEPARATOR, SPIROTHERM MODEL VDN-600 FA OR APPROVED EQUAL TO SUPPORT FULL CHILLED WATER FLOW VOLUME.
53	PROVIDE AND INSTALL NEW AIR DIRT SEPARATOR, SPIROTHERM MODEL VDN-500 FA OR APPROVED EQUAL TO SUPPORT FULL HOT WATER FLOW VOLUME.
54	PROVIDE AND INSTALL DUCT SUPPORTS. REFER TO "DUCT SUPPORT DETAIL" ON DRAWING M5.1.
55	PROVIDE AND INSTALL 5-GALLON CHEMICAL SHOT FILTER FEEDER WITH FUNNEL.
56	REFER TO ELECTRICAL DRAWINGS FOR EMERGENCY PUSH BUTTONS INSTALLATION REQUIREMENTS.
57	PROVIDE AND INSTALL CONDENSATE DILUTION TRAP AND NEUTRALIZATION TANK COMPLETE. PIPE OUTLET TO FLOOR DRAIN.
59	PROVIDE AND INSTALL WALL-MOUNTED, BAS-NETWORKABLE GAS DETECTOR FOR MONITORING CARBON MONOXIDE CONCENTRATION. PROVIDE WALL-MOUNTED ANNUNCIATOR PANEL AND INTERLOCK WITH GAS DETECTOR IN SPACE.
60	PROVIDE AND INSTALL NEW 2" DIAMETER SCHEDULE 40 STEEL GAS PIPING, SUPPORTS, ACCESSORIES, AND CONTROLS COMPLETE. CONNECT TO EXISTING GAS PIPING.
61	PROVIDE AND INSTALL 10" WC LINE PRESSURE GAS REGULATOR AND VENT AS REQUIRED BY MANUFACTURER. CONNECT TO EXISTING BOILER REGULATOR VENT PIPING.

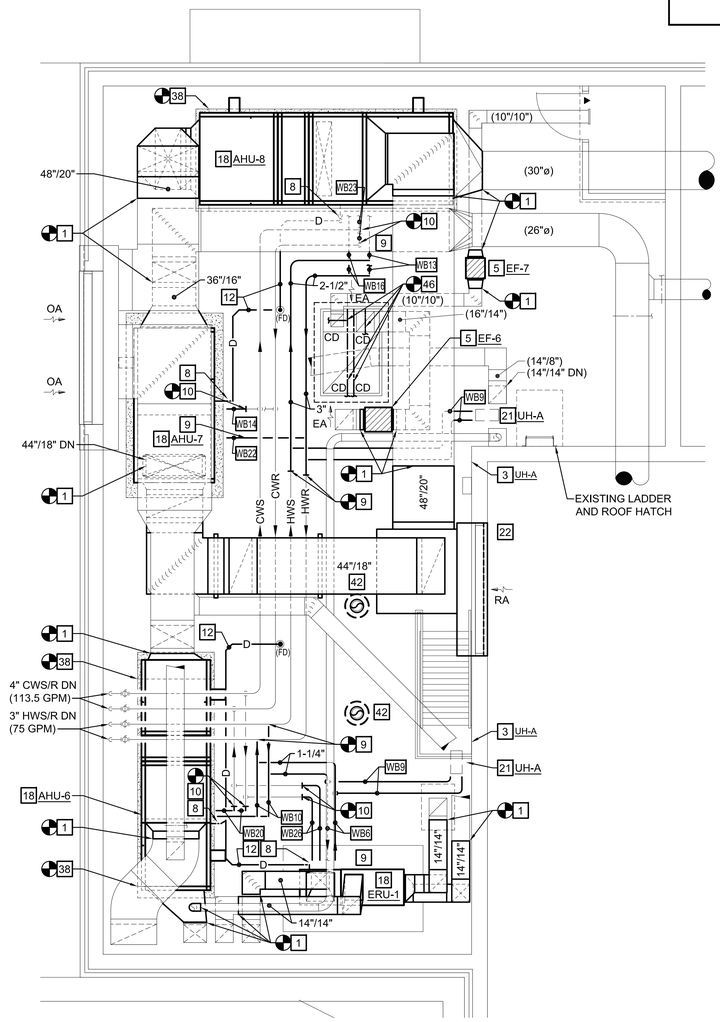
WATER BALANCE NOTES ☐	
NO.	DESCRIPTION
WB6	3/4" HWR/S (3.0 GPM)
WB9	1" HWR/S (4.5 GPM)
WB10	1" HWR/S (5.0 GPM)
WB13	1-1/2" HWR/S (17.0 GPM)
WB14	1-1/2" HWR/S (20.0 GPM)
WB16	1-1/2" HWR/S (21.0 GPM)
WB20	2" CWR/S (24.0 GPM)
WB23	2-1/2" CWR/S (44.0 GPM)
WB26	1" CWR/S (6.0 GPM)

NOTE: PRESSURE TEST ALL EXISTING MEDIUM PRESSURE DUCTWORK PER SPECIFICATION SECTION 230500.



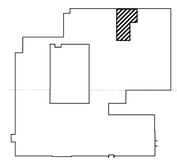
ENLARGED FIRST FLOOR PLAN - MECHANICAL ROOM - NEW WORK

SCALE: 1/4" = 1'-0"



ENLARGED SECOND FLOOR PLAN - MECHANICAL MEZZANINE - NEW WORK

SCALE: 1/4" = 1'-0"



KEY PLAN

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TRUE NORTH

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KEVIN D. ALLEN
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA

ENLARGED FLOOR PLANS - MECHANICAL - NEW WORK

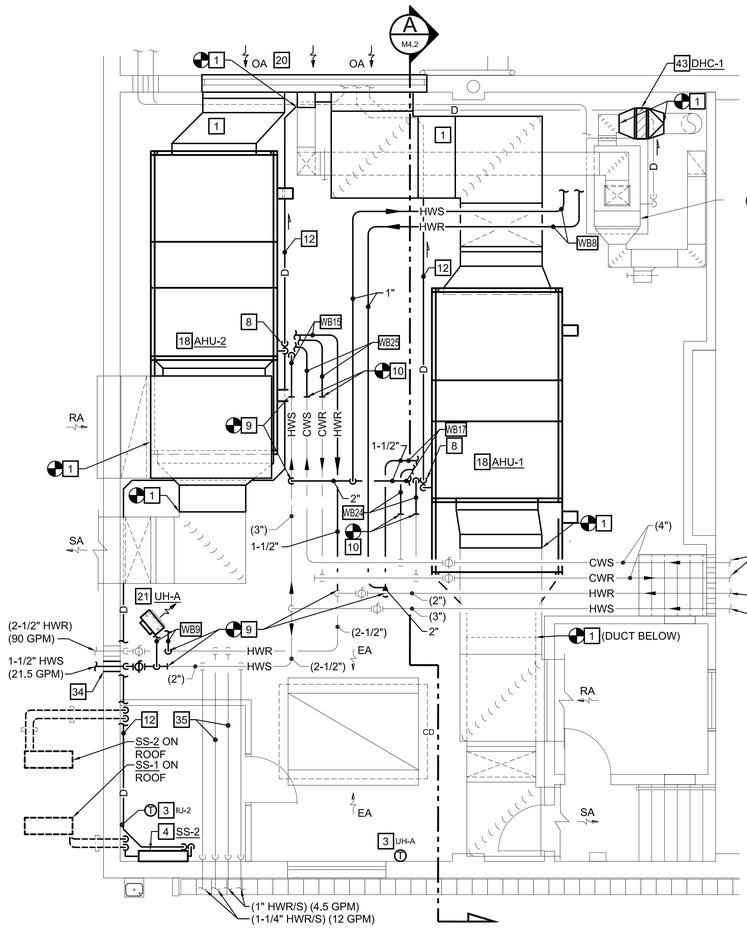
REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO:	21-156
DESIGNED BY:	CEP
DRAWN BY:	SLS
CHECKED BY:	KDA

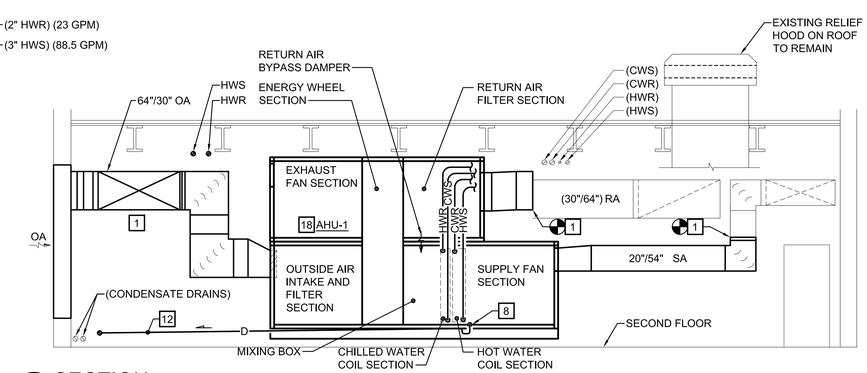
M4.1

DATE: 12/20/2024



ENLARGED SECOND FLOOR PLAN - MECHANICAL ROOM - NEW WORK

SCALE: 1/4" = 1'-0"

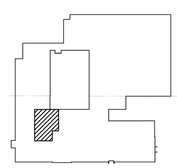


A SECTION
M4.2
SCALE: 1/4" = 1'-0"

NEW WORK NOTES ☐	
NO.	DESCRIPTION
1	PROVIDE AND INSTALL DUCTWORK, INSULATION, AND SUPPORTS COMPLETE TO POINT INDICATED. RECONNECT TO EXISTING DUCTWORK.
3	PROVIDE AND INSTALL THERMOSTAT/TEMPERATURE SENSOR, WIRING, AND ACCESSORIES COMPLETE. WHERE INDICATED, PROVIDE AND INSTALL LOCKABLE CLEAR PLASTIC COVER.
4	PROVIDE AND INSTALL WALL MOUNTED DUCTLESS SPLIT SYSTEM INDOOR UNIT, CONTROLS, SUPPORTS, AND ACCESSORIES COMPLETE. UNIT SHALL INCLUDE AN INTEGRAL CONDENSATE DRAIN PUMP.
8	REFER TO "COIL CONDENSATE TRAP DETAIL" ON DRAWING M6.1.
9	PROVIDE AND INSTALL HWR/S PIPING, VALVE PACKAGES, SUPPORTS, AND ACCESSORIES COMPLETE. CONNECT TO NEW EQUIPMENT AND RECONNECT TO EXISTING ISOLATED PIPING. CHECK VICTAULIC CONNECTIONS IN HWR/S PIPING THROUGHOUT BUILDING AS TEMPERATURE IS LOWERED. WHERE LEAK OCCURS, REMOVE FITTING AND REPLACE WITH WELD IN SPOOL PIECES. ALL NEW HWR/S PIPING SHALL BE WELDED.
10	PROVIDE AND INSTALL CWR/S PIPING, VALVE PACKAGES, SUPPORTS, AND ACCESSORIES COMPLETE. CONNECT TO NEW EQUIPMENT AND RECONNECT TO EXISTING ISOLATED PIPING.
12	PROVIDE AND INSTALL CONDENSATE DRAIN PIPING AND SUPPORTS COMPLETE. FOLLOW EXISTING DRAIN ROUTE TO NEAREST FLOOR DRAIN, ROOF DRAIN, OR SPLASH BLOCK AS INDICATED.
20	REINSTALL OUTDOOR AIR INTAKE LOUVER AND FULLY SEAL EXTERIOR WALL PENETRATION AFTER NEW UNITS HAVE BEEN BROUGHT INTO THE MEZZANINE.
21	PROVIDE AND INSTALL UNIT HEATER, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
34	PROVIDE AND INSTALL PIPE SLEEVES IN EXISTING WALL PENETRATION EXPANDED FOR LARGER PIPE SIZE. PIPE PENETRATION FIRE RATING SHALL MATCH RATING OF WALL.
35	RUN PIPING CONCEALED ABOVE CEILING IF SPACE ALLOWS. EXISTING INSTALLATION HAS PIPES RUNNING BELOW THE DROP CEILING.
36	PROVIDE AND INSTALL 4" THICK HOUSEKEEPING PAD. REFEER TO "HOUSE KEEPING PAD DETAIL" ON DRAWING M5.2.
43	PROVIDE AND INSTALL DUCT HEATING COIL, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.

WATER BALANCE NOTES ☐	
NO.	DESCRIPTION
WB8	1" HWR/S (4.0 GPM)
WB9	1" HWR/S (4.5 GPM)
WB15	1-1/2" HWR/S (20.5 GPM)
WB17	1-1/2" HWR/S (21.5 GPM)
WB24	4" CWR/S (98.5 GPM)
WB25	4" CWR/S (100.5 GPM)

NOTE: PRESSURE TEST ALL EXISTING MEDIUM PRESSURE DUCTWORK PER SPECIFICATION SECTION 230500.



KEY PLAN
NOT TO SCALE

TRUE NORTH

COMMONWEALTH OF VIRGINIA
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12/20/2024
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA

ENLARGED FLOOR PLANS - MECHANICAL - NEW WORK

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: SLS
CHECKED BY: KDA

M4.2

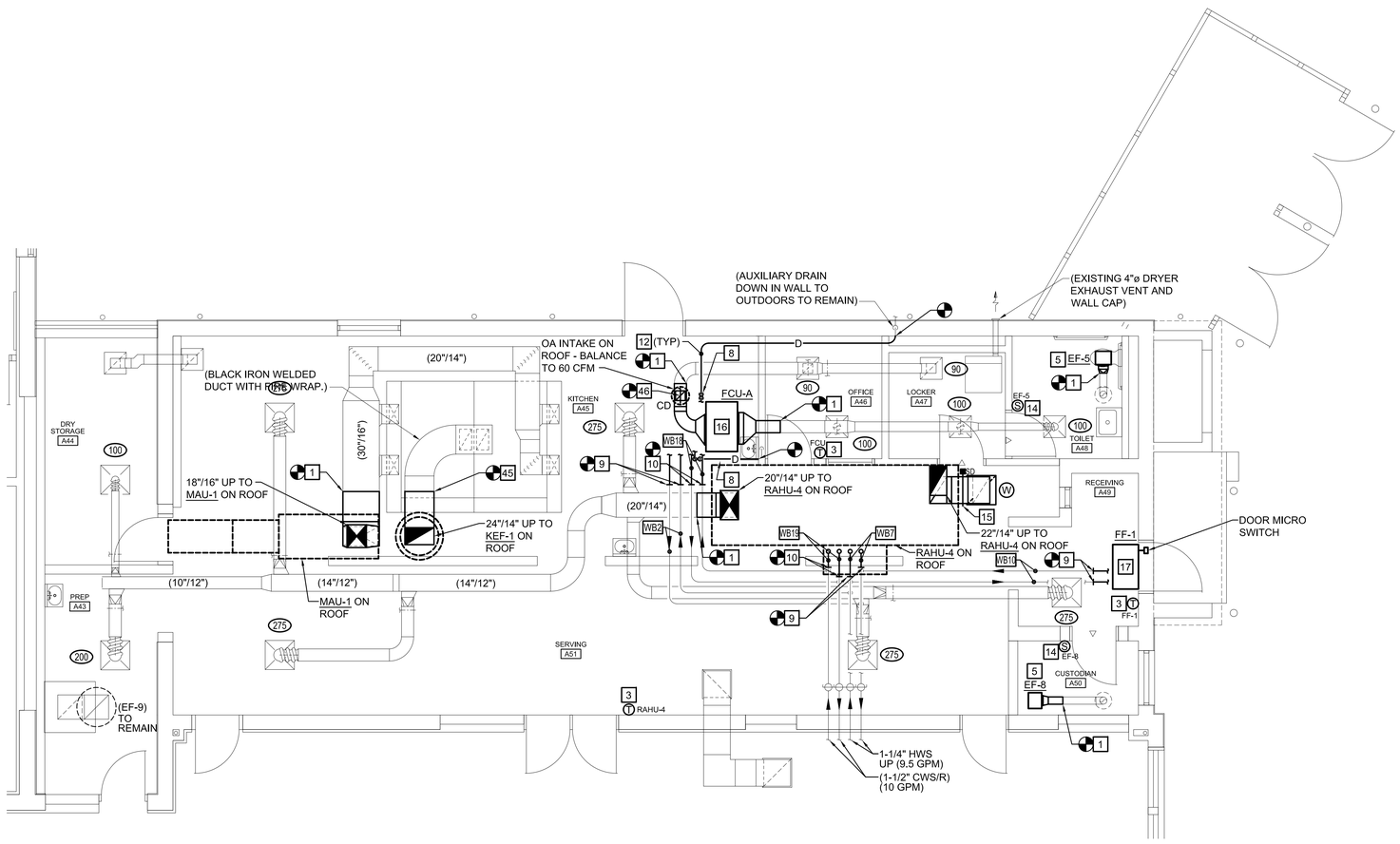
DATE: 12/20/2024

NEW WORK NOTES ☐	
NO.	DESCRIPTION
1	PROVIDE AND INSTALL DUCTWORK, INSULATION, AND SUPPORTS COMPLETE TO POINT INDICATED. RECONNECT TO EXISTING DUCTWORK.
3	PROVIDE AND INSTALL THERMOSTAT/TEMPERATURE SENSOR, WIRING, AND ACCESSORIES COMPLETE. WHERE INDICATED, PROVIDE AND INSTALL LOCKABLE CLEAR PLASTIC COVER.
5	PROVIDE AND INSTALL EXHAUST FAN, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
8	REFER TO "COIL CONDENSATE TRAP DETAIL" ON DRAWING M6.1.
9	PROVIDE AND INSTALL HWR/S PIPING, VALVE PACKAGES, SUPPORTS, AND ACCESSORIES COMPLETE. CONNECT TO NEW EQUIPMENT AND RECONNECT TO EXISTING ISOLATED PIPING. CHECK VICTAULIC CONNECTIONS IN HWR/S PIPING THROUGHOUT BUILDING AS TEMPERATURE IS LOWERED. WHERE LEAK OCCURS, REMOVE FITTING AND REPLACE WITH WELD IN SPOOL PIECES. ALL NEW HWR/S PIPING SHALL BE WELDED.
10	PROVIDE AND INSTALL CWR/S PIPING, VALVE PACKAGES, SUPPORTS, AND ACCESSORIES COMPLETE. CONNECT TO NEW EQUIPMENT AND RECONNECT TO EXISTING ISOLATED PIPING.

NEW WORK NOTES ☐	
NO.	DESCRIPTION
12	PROVIDE AND INSTALL CONDENSATE DRAIN PIPING AND SUPPORTS COMPLETE. FOLLOW EXISTING DRAIN ROUTE TO NEAREST FLOOR DRAIN, ROOF DRAIN, OR SPLASH BLOCK AS INDICATED.
14	PROVIDE AND INSTALL EXHAUST FAN SWITCH, WIRING, AND ACCESSORIES COMPLETE.
15	REFER TO ELECTRICAL DRAWINGS FOR SMOKE DETECTOR INSTALLATION REQUIREMENTS.
16	PROVIDE AND INSTALL FAN COIL UNIT, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
17	PROVIDE AND INSTALL FLY FAN, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE.
45	PROVIDE AND INSTALL 16 GAUGE BLACK IRON DUCTWORK AND SUPPORTS COMPLETE. WELD TO EXISTING DUCTWORK AND FIRE WRAP.
46	PROVIDE AND INSTALL NEW OUTDOOR AIR INTAKE DUCTWORK AND CONTROL DAMPER. CONNECT TO INTAKE HOOD CONNECTION AND EXISTING EXHAUST DUCTWORK AS INDICATED.

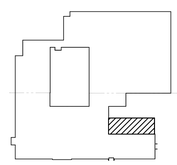
WATER BALANCE NOTES ☐	
NO.	DESCRIPTION
WB2	3/4" HWR/S (1.0 GPM)
WB7	1" HWR/S (3.5 GPM)
WB10	1" HWR/S (5.0 GPM)
WB18	3/4" CWR/S (2.0 GPM)
WB19	1-1/4" CWR/S (8.0 GPM)

NOTE: PRESSURE TEST ALL EXISTING MEDIUM PRESSURE DUCTWORK PER SPECIFICATION SECTION 230500.



ENLARGED FLOOR PLAN - KITCHEN - MECHANICAL - NEW WORK

SCALE: 1/4" = 1'-0"



KEY PLAN

NOT TO SCALE

TRUE NORTH

COMMONWEALTH OF VIRGINIA
KEVIN D. ALLEN
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL

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ENLARGED FLOOR PLANS - MECHANICAL - NEW WORK

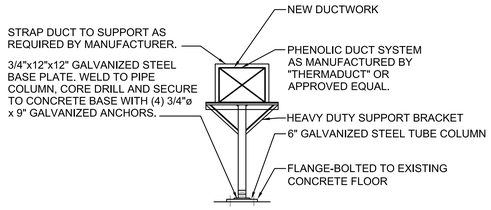
REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: SLS
CHECKED BY: KDA

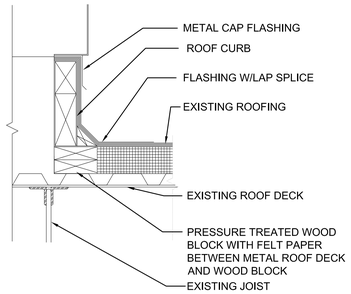
M4.3

DATE: 12/20/2024



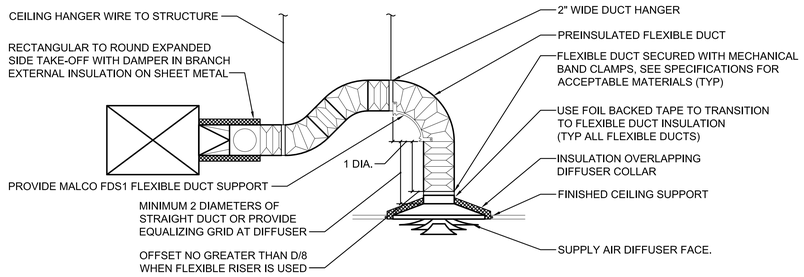
NOTE: FIELD PAINT WITH GALVANIZED PAINT ALL METAL COMPONENTS AFTER ASSEMBLY. SUPPORT PHENOLIC DUCT SYSTEM AS REQUIRED BY MANUFACTURER.

DUCT SUPPORT DETAIL
NOT TO SCALE



NOTE: CONTRACTOR SHALL MATCH EXISTING ROOF MATERIAL.

ROOF CURB FLASHING DETAIL
NOT TO SCALE



TYPICAL EXISTING CEILING DIFFUSER INSTALLATION DETAIL
NOT TO SCALE

NEW WORK NOTES: (THIS SHEET ONLY)

1. PROVIDE "GLOBAL PLASMA SOLUTIONS" MODEL "GPS-IMOD" BIPOLAR IONIZATION GENERATOR FOR AHU-1, 2, 6, 7 AND 8, RAHU-3 AND 4, AND ERU-1. IMOD SHALL BE MOUNTED UPSTREAM OF THE COOLING COIL AT THE TOP OF THE FINNED SURFACE AREA OF THE COIL. REFER TO FIGURE 1 FOR EXAMPLE. PROVIDE SUFFICIENT QUANTITY OF 6" IMOD SECTIONS TO MATCH THE WIDTH OF THE COOLING COIL. VERIFY THAT ALL MODULAR SECTIONS OF THE IMOD ARE ATTACHED SNUGLY TOGETHER IN ACCORDANCE WITH FIGURE 2.
2. PROVIDE "GLOBAL PLASMA SOLUTIONS" 15 WATT POWER SUPPLY WITH MULTI-VOLTAGE INPUT FOR EACH ROOFTOP UNIT. WIRE POWER SUPPLY TO IMOD UTILIZING 6'-0" FLEXIBLE POWER CABLE PROVIDED WITH IMOD. MOUNT POWER SUPPLY ON INSIDE OF ROOFTOP UNIT CABINET AND CONNECT TO UNIT POWER.

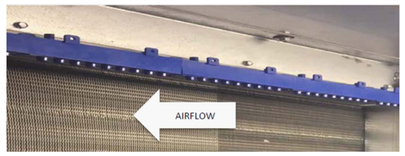


FIGURE 1: BI DEVICE MOUNTING LOCATION

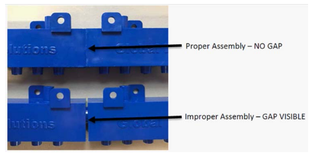
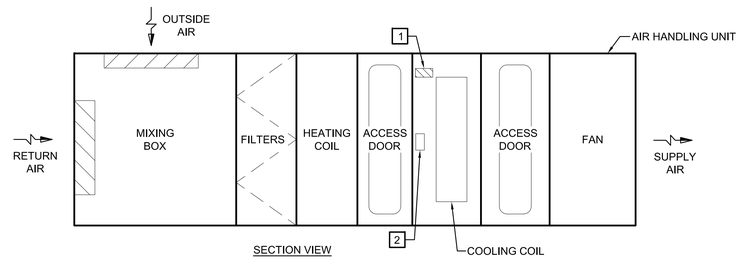
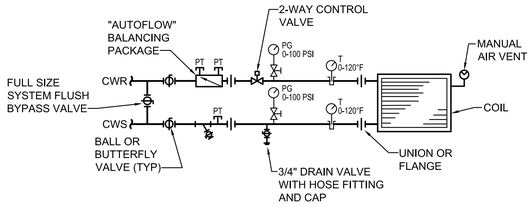


FIGURE 2: BI DEVICE MODULE ASSEMBLY

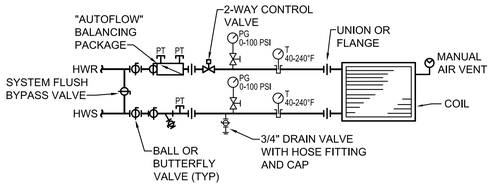


ROOFTOP UNIT BIPOLAR IONIZATION INSTALLATION DIAGRAM
NOT TO SCALE



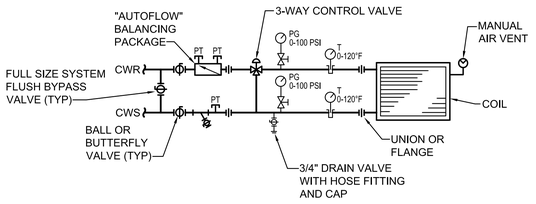
NOTES:
1. PROVIDE FOR ERU-1, AND FCU-1 (NO TEMPERATURE SENSOR FOR FCU-1).
2. ARRANGE PIPING TO PERMIT REMOVAL OF COIL IN AHU'S.

CHILLED WATER COIL PIPING DIAGRAM - 2 WAY VALVE
NOT TO SCALE



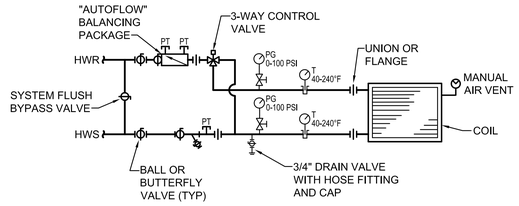
NOTES:
1. PROVIDE FOR ERU-1, FCU-1, VAV TERMINALS, CABINET UNIT HEATERS UNIT HEATERS, DUCT MOUNTED HEATING COILS AND IFB COIL.
2. ARRANGE PIPING TO PERMIT REMOVAL OF COIL IN AHU'S.
3. OMIT THERMOMETERS AND PRESSURE GAGES AT VAV TERMINALS, CABINET UNIT HEATERS AND DUCT HEATING COIL.

HOT WATER COIL PIPING DIAGRAM - 2 WAY VALVE
NOT TO SCALE



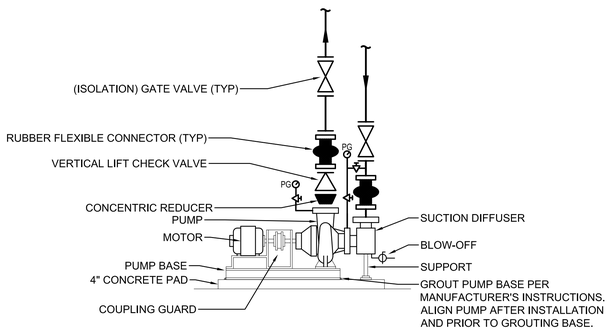
NOTES:
1. PROVIDE FOR AHU-1,2,6,7, AND 8 AND RAHU-3 AND 4.
2. ARRANGE PIPING TO PERMIT REMOVAL OF COIL IN AHU'S.

CHILLED WATER COIL PIPING DIAGRAM - 3 WAY VALVE
NOT TO SCALE

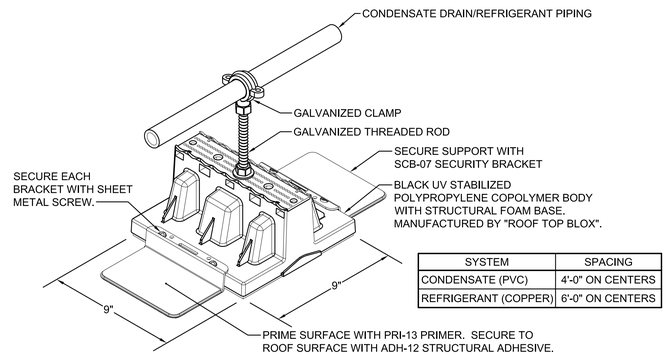


NOTES:
1. PROVIDE FOR ALL AHU PREHEAT AND REHEAT COILS, AND RAHU-3 AND 4.
2. ARRANGE PIPING TO PERMIT REMOVAL OF COIL IN AHU'S.
3. OMIT THERMOMETERS AND PRESSURE GAGES AT VAV TERMINALS & DUCT HEATING COILS.

HOT WATER COIL PIPING DIAGRAM - 3 WAY VALVE
NOT TO SCALE

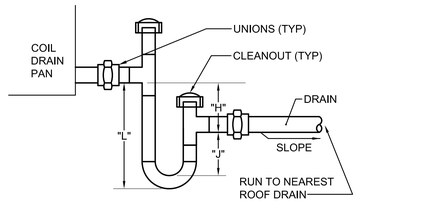


BASE MOUNTED END SUCTION PUMP PIPING DETAIL
NOT TO SCALE



SYSTEM	SPACING
CONDENSATE (PVC)	4'-0" ON CENTERS
REFRIGERANT (COPPER)	6'-0" ON CENTERS

ROOF MOUNTED PIPING SUPPORT DETAIL
NOT TO SCALE



NOTES:
1. "H" = (1" FOR EACH 1" OF MAXIMUM NEGATIVE STATIC PRESSURE) + 1".
2. "J" = HALF OF H.
3. "L" = H + J + PIPE DIAMETER + INSULATION.
4. SIZE TRAP IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

COIL CONDENSATE TRAP DETAIL
NOT TO SCALE

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
MECHANICAL DETAILS

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
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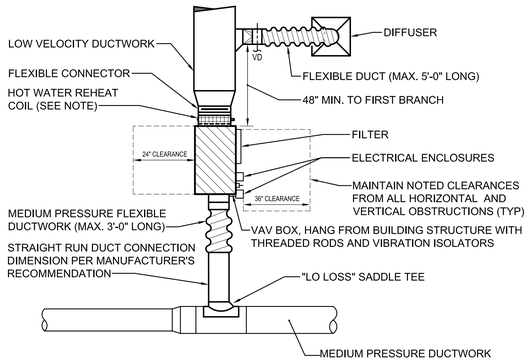
CHECKED BY: KDA

M5.1

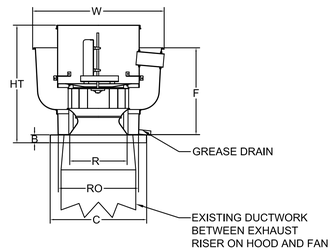
DATE: 12/20/2024



NOTE: EXTERNALLY INSULATE HOT WATER RE-HEAT COIL AND COIL PIPING CONNECTIONS TO PREVENT CONDENSATION ON PIPING AND U-BENDS WHEN CONTROL VALVE IS CLOSED.

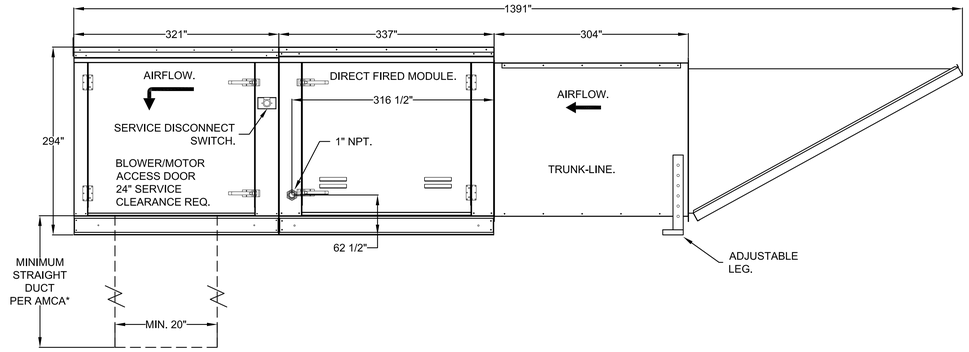
TYPICAL SERIES FAN POWERED VAV BOX (WITH HOT WATER RE-HEAT COIL) INSTALLATION DETAIL

NOT TO SCALE



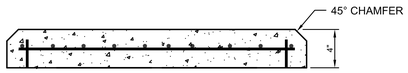
NCAFA BELT DRIVE
CENTRIFUGAL UP-BLAST EXHAUST FANS DIMENSIONAL DATA

FAN MODEL	HT	W	B	C	F	R	RO	WEIGHT LB.
DIMENSIONS	33-3/8"	38-7/8"	2"	28"	29-1/2"	18"	26"	195



KITCHEN MAU AND EXHAUST FAN DETAIL

NOT TO SCALE



NOTES:

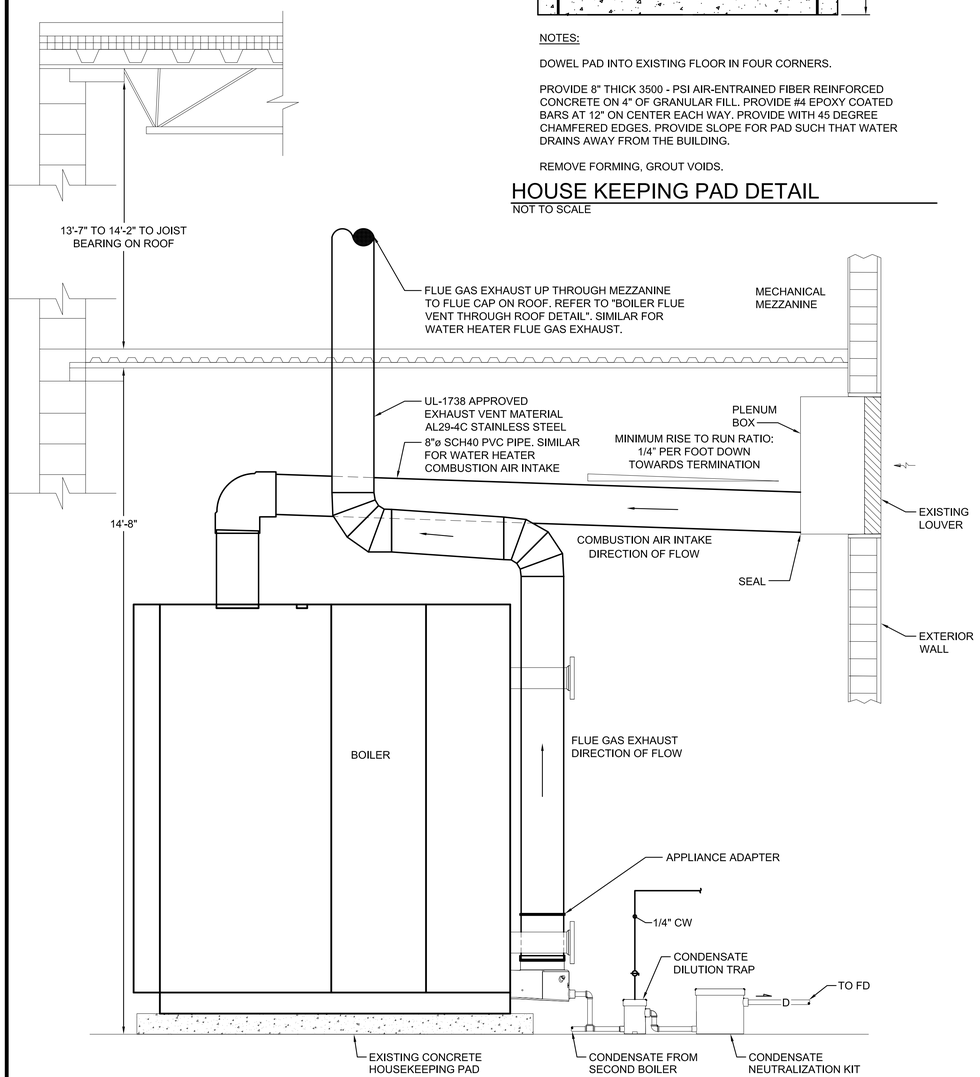
DOWEL PAD INTO EXISTING FLOOR IN FOUR CORNERS.

PROVIDE 8" THICK 3500 - PSI AIR-ENTRAINED FIBER REINFORCED CONCRETE ON 4" OF GRANULAR FILL. PROVIDE #4 EPOXY COATED BARS AT 12" ON CENTER EACH WAY. PROVIDE WITH 45 DEGREE CHAMFERED EDGES. PROVIDE SLOPE FOR PAD SUCH THAT WATER DRAINS AWAY FROM THE BUILDING.

REMOVE FORMING, GROUT VOIDS.

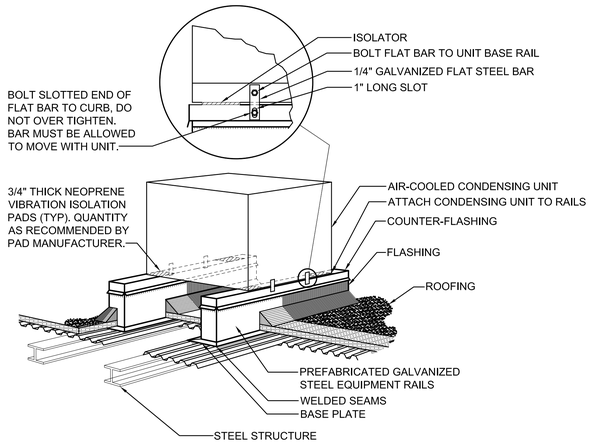
HOUSE KEEPING PAD DETAIL

NOT TO SCALE



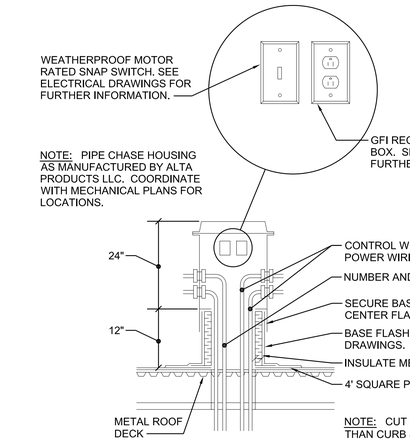
BOILER VENTING DETAIL

NOT TO SCALE (TYPICAL FOR B-1 AND B-2)



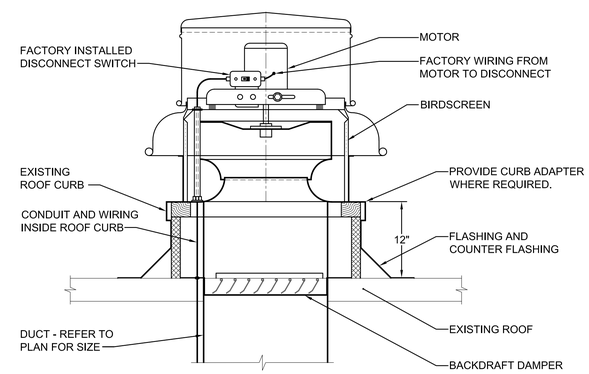
TYPICAL CONDENSING UNIT CURB DETAIL

NOT TO SCALE (TYPICAL FOR SS-1 OU, SS-2 OU, AND SS-3 OU)



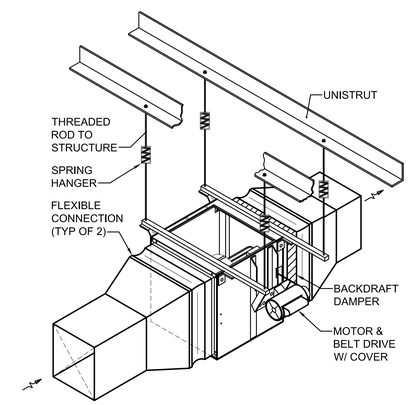
REFRIGERANT PIPING AND POWER THROUGH ROOF DETAIL

NOT TO SCALE



ROOF EXHAUST FAN DETAIL

NOT TO SCALE



IN-LINE EXHAUST FAN DETAIL

NOT TO SCALE

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HVAC REPLACEMENT
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NEWPORT NEWS VIRGINIA

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COMM. NO:	21-156
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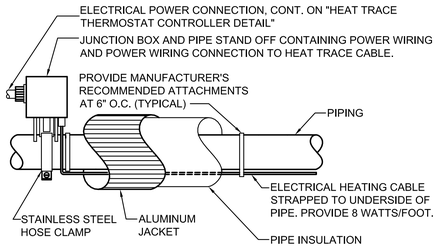
CHECKED BY:	KDA

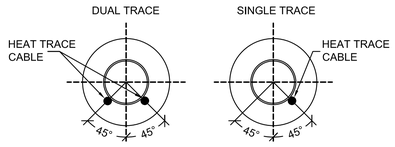
M5.2

DATE: 12/20/2024



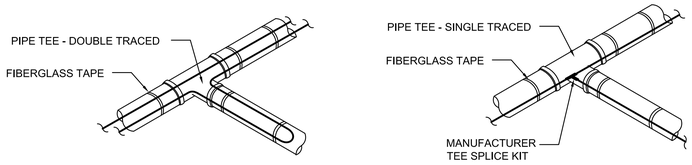
HEAT TRACE CABLE STAND OFF DETAIL

NOT TO SCALE



HEAT TRACE ORIENTATION DETAIL

NOT TO SCALE

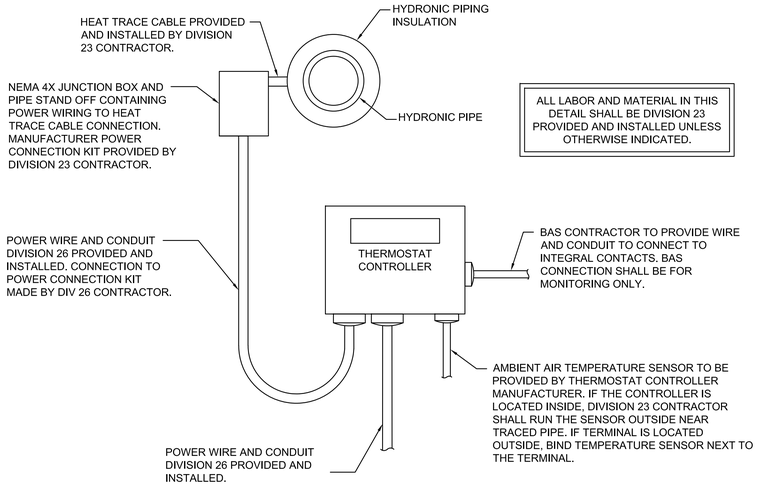


REMARK:

THE BASIS OF DESIGN HEAT TRACE CABLE IS THE HEAT TRACE PRODUCTS, LLC MODEL 2700. THE ABOVE ARE MANUFACTURER RECOMMENDED TRACINGS FOR THE BASIS OF DESIGN HEAT TRACE CABLE. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND FOLLOWING THE SUBMITTED HEAT TRACE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

TYPICAL HEAT TRACE CABLE - TEE FITTINGS DETAIL

NOT TO SCALE



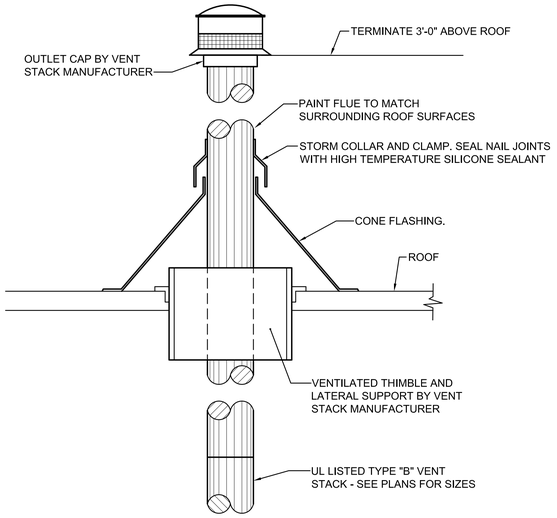
HEAT TRACE THERMOSTAT CONTROLLER DETAIL

NOT TO SCALE

DUCTWORK CONSTRUCTION REQUIREMENTS

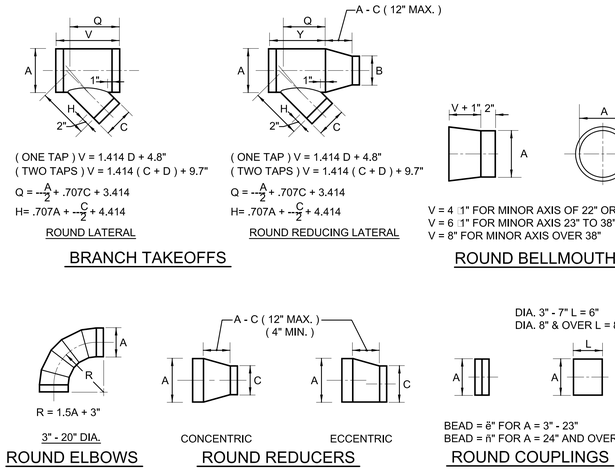
SYSTEM	PRESSURE CLASS	SEAL CLASS	LEAKAGE CLASS
SUPPLY AIR	+2.5" WG	CLASS A	RECTANGULAR - 4 ROUND - 2
RETURN AIR	-1.0" WG	CLASS A	RECTANGULAR - 8 ROUND - 4
EXHAUST AIR	-1.0" WG	CLASS A	RECTANGULAR - 8 ROUND - 4

NOTE:
1. CONSTRUCT ALL DUCTWORK IN ACCORDANCE WITH "SMACNA" HVAC DUCT CONSTRUCTION STANDARDS.
2. ALL RECTANGULAR AND MITERED ELBOWS SHALL BE PROVIDED WITH TURNING VANES.
3. REFER TO SMACNA HVAC DUCT LEAKAGE MANUAL FIGURE 5-1 FOR LEAKAGE RATES.



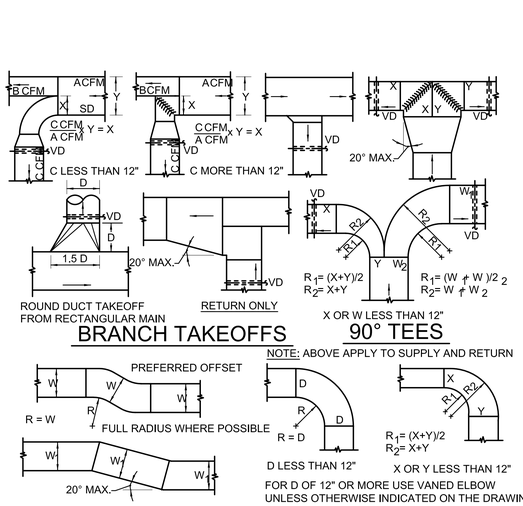
BOILER VENT FLUE THROUGH ROOF DETAIL

NOT TO SCALE (SIMILAR FOR WATER HEATER FLUES)



MEDIUM PRESSURE SINGLE-WALL ROUND DUCTWORK FITTING DETAILS

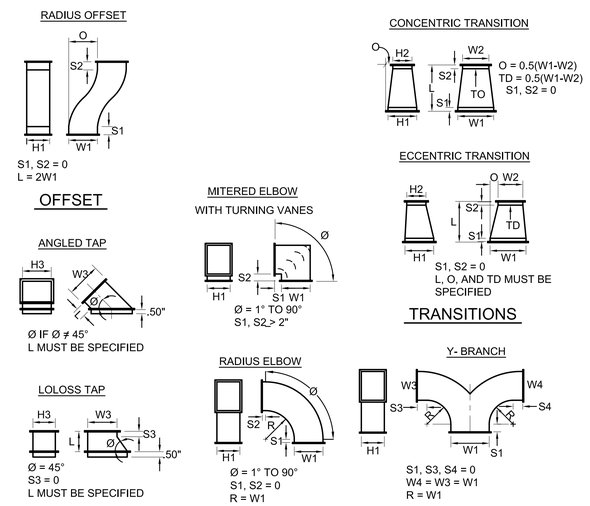
NOT TO SCALE



LOW VELOCITY SINGLE WALL RECTANGULAR DUCTWORK DETAILS

NOT TO SCALE

REFER TO DUCTWORK CONSTRUCTION REQUIREMENTS



MEDIUM PRESSURE SINGLE WALL RECTANGULAR DUCTWORK DETAIL

NOT TO SCALE

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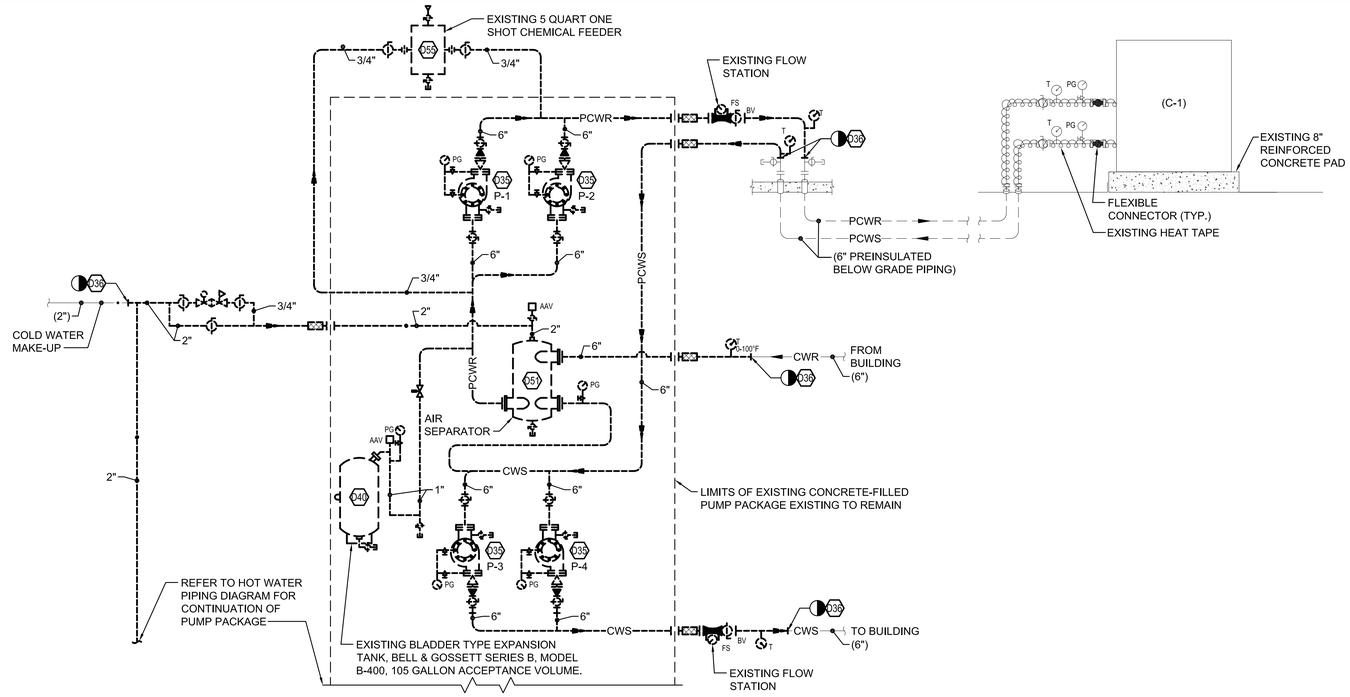
DATE: 12/20/2024



CHILLED WATER PIPING DIAGRAM - DEMOLITION

NOT TO SCALE

HOT WATER PIPING DIAGRAM - DEMOLITION

NOT TO SCALE

DEMOLITION NOTES

NO.	DESCRIPTION
D35	PUMP PACKAGE GROUTED BASE FRAME TO REMAIN. REMOVE ALL PUMPS, PIPING, VFD'S, CONTROLS, EXPANSION TANKS, SEPARATORS, AND WIRING COMPLETE. SUPPORTS FOR COMPONENTS SHALL REMAIN FOR REUSE. HOUSEKEEPING PAD TO REMAIN.
D36	DISCONNECT PIPING AND REMOVE COMPLETE TO THE POINT REQUIRED FOR INSTALLATION OF NEW WORK.
D37	REMOVE BOILER AND ASSOCIATED INLINE PUMPS, PIPING, CONTROLS AND ACCESSORIES COMPLETE.
D39	REMOVE WATER HEATER AND ASSOCIATED PIPING AND PUMPS, CONTROLS, AND ACCESSORIES COMPLETE.
D40	REMOVE EXPANSION TANK, AND ACCESSORIES COMPLETE. SUPPORTS FOR HWR/S AND CWR/S EXPANSION TANKS SHALL REMAIN FOR RE-USE. SUPPORTS FOR DOMESTIC WATER EXPANSION TANK SHALL BE REMOVED.
D51	REMOVE AIR DIRT SEPARATOR AND ACCESSORIES COMPLETE. SUPPORTS SHALL BE EXISTING TO REMAIN FOR RE-USE.
D52	REMOVE HOT WATER RESET CONTROL VALVE AND ACCESSORIES COMPLETE.
D53	PUMP VFDS AND CONTROLS TO BE REMOVED. SUPPORTS SHALL BE EXISTING TO REMAIN FOR RE-USE.
D54	REMOVE INLINE PUMP, ACCESSORIES, SUPPORTS, AND CONTROLS COMPLETE.
D55	REMOVE CHEMICAL SHOT FEEDER, ACCESSORIES, AND SUPPORTS COMPLETE.

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WATER PIPING DIAGRAMS - DEMOLITION

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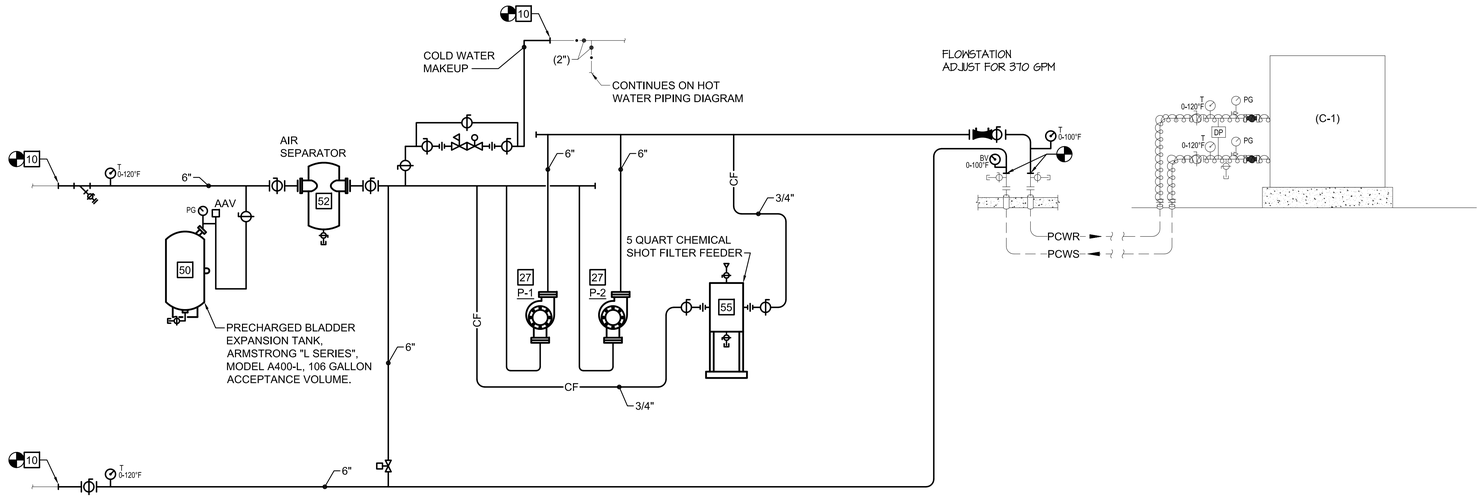
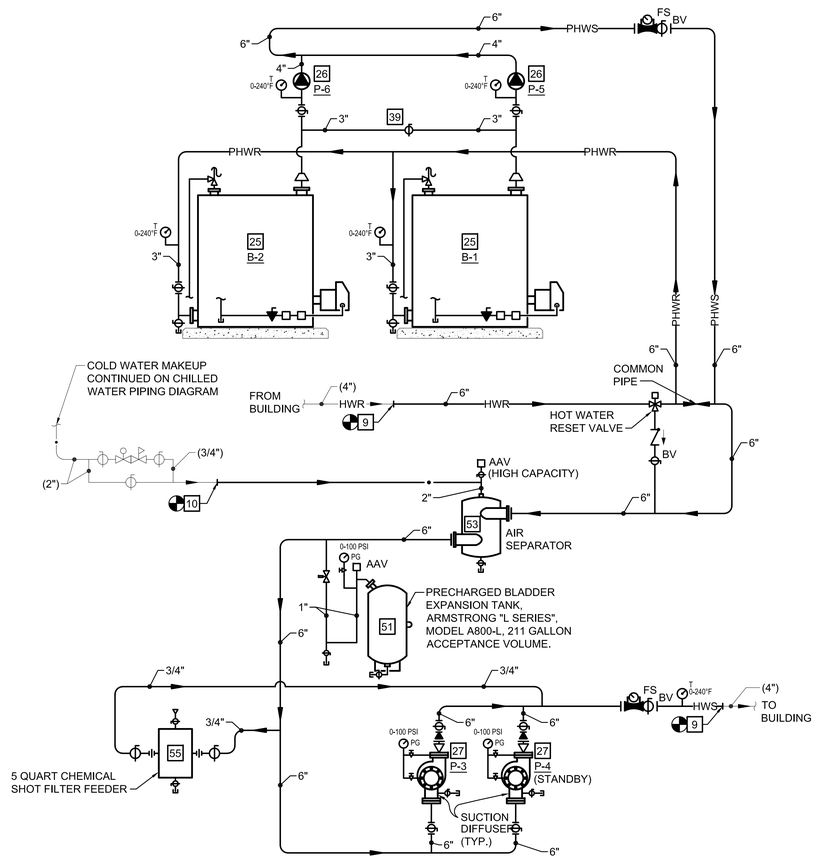


CHILLED WATER PIPING DIAGRAM - NEW WORK

NOT TO SCALE



HOT WATER PIPING DIAGRAM - NEW WORK

NOT TO SCALE

NEW WORK NOTES

NO.	DESCRIPTION
9	PROVIDE AND INSTALL HWR/S PIPING, VALVE PACKAGES, SUPPORTS, AND ACCESSORIES COMPLETE. CONNECT TO NEW EQUIPMENT AND RECONNECT TO EXISTING ISOLATED PIPING. CHECK VICTAULIC CONNECTIONS IN HWR/S PIPING THROUGHOUT BUILDING AS TEMPERATURE IS LOWERED. WHERE LEAK OCCURS, REMOVE FITTING AND REPLACE WITH WELD IN SPOOL PIECES. ALL NEW HWR/S PIPING SHALL BE WELDED.
10	PROVIDE AND INSTALL CWR/S PIPING, VALVE PACKAGES, SUPPORTS, AND ACCESSORIES COMPLETE. CONNECT TO NEW EQUIPMENT AND RECONNECT TO EXISTING ISOLATED PIPING.
25	PROVIDE AND INSTALL CONDENSING BOILER, FLUE PIPING, CONTROLS, AND ACCESSORIES COMPLETE. PROVIDE AND INSTALL NEOPRENE ISOLATION PADS FOR BOILER MOUNTING ON HOUSEKEEPING PAD. REFER TO "BOILER VENTING DETAIL" ON DRAWING M5.2.
26	PROVIDE AND INSTALL INLINE PUMPS, SUPPORTS, CONTROLS, AND ACCESSORIES COMPLETE. REFER TO "BASE MOUNTED END SUCTION PUMP PIPING DETAIL" ON DRAWING M5.1.
27	PROVIDE AND INSTALL NEW PUMPS, VFDS, CONTROLS, AND ALL OTHER ACCESSORIES COMPLETE ON EXISTING PUMP PACKAGE BASE. NEW PUMP BASES SHALL BE GROUTED TO EXISTING PUMP PACKAGE BASE AFTER ALL CONCRETE HAS BEEN REPAIRED TO PROVIDE A SMOOTH SURFACE.
50	PROVIDE AND INSTALL NEW PRE-CHARGED BLADDER EXPANSION TANK WITH HEAVY DUTY REPLACEABLE LADDER, RING BASE, LIFTING RINGS, AND NPT SYSTEM CONNECTION SIZED TO ACCEPT 106 GALLONS OF CHILLED WATER AT A MAXIMUM PRESSURE OF 125 PSI.
51	PROVIDE AND INSTALL NEW PRE-CHARGED BLADDER EXPANSION TANK WITH HEAVY DUTY REPLACEABLE LADDER, RING BASE, LIFTING RINGS, AND NPT SYSTEM CONNECTION SIZED TO ACCEPT 211 GALLONS OF HOT WATER AT A MAXIMUM PRESSURE OF 125 PSI.
52	PROVIDE AND INSTALL NEW AIR DIRT SEPARATOR, SPIROTHERM MODEL VDN-600 FA OR APPROVED EQUAL TO SUPPORT FULL CHILLED WATER FLOW VOLUME.
53	PROVIDE AND INSTALL NEW AIR DIRT SEPARATOR, SPIROTHERM MODEL VDN-500 FA OR APPROVED EQUAL TO SUPPORT FULL HOT WATER FLOW VOLUME.
55	PROVIDE AND INSTALL 5-GALLON CHEMICAL SHOT FILTER FEEDER WITH FUNNEL.

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WATER PIPING DIAGRAMS - NEW WORK

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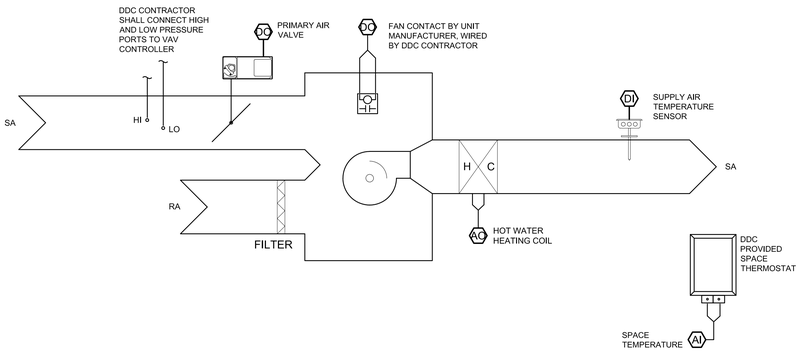
DRAWN BY:	SLS
CHECKED BY:	KDA

M5.5

DATE: 12/20/2024



SERIES FAN POWERED TERMINAL UNIT CONTROL DIAGRAM

NOT TO SCALE

FAN POWERED SERIES VAV BOX WITH HOT WATER RE-HEAT

1. BUILDING AUTOMATION SYSTEM INTERFACE:

   a. THE BUILDING AUTOMATION SYSTEM (BAS) SHALL SEND THE CONTROLLER OCCUPIED AND UNOCCUPIED COMMANDS. THE BAS MAY ALSO SEND A HEAT/COOL MODE, PRIORITY SHUTDOWN COMMANDS, SPACE TEMPERATURE AND/OR SPACE TEMPERATURE SETPOINT. IF COMMUNICATION IS LOST WITH THE BAS, THE VAV CONTROLLER SHALL OPERATE USING ITS LOCAL SETPOINTS.

2. OCCUPANCY MODE:

   a. THE OCCUPANCY MODE SHALL BE COMMUNICATED OR HARDWIRED TO THE VAV VIA A BINARY INPUT. VALID OCCUPANCY MODES FOR THE VAV SHALL BE:

      (1) OCCUPIED: NORMAL OPERATING MODE FOR OCCUPIED SPACES OR DAYTIME OPERATION. WHEN THE UNIT IS IN THE OCCUPIED MODE THE VAV SHALL MAINTAIN THE SPACE TEMPERATURE AT THE ACTIVE OCCUPIED HEATING OR COOLING SETPOINT. APPLICABLE VENTILATION AND AIRFLOW SETPOINTS SHALL BE ENFORCED. THE OCCUPIED MODE SHALL BE THE DEFAULT MODE OF THE VAV.
      (2) UNOCCUPIED: NORMAL OPERATING MODE FOR UNOCCUPIED SPACES OR NIGHTTIME OPERATION. WHEN THE UNIT IS IN UNOCCUPIED MODE THE VAV CONTROLLER SHALL MAINTAIN THE SPACE TEMPERATURE AT THE STORED UNOCCUPIED HEATING OR COOLING SETPOINT REGARDLESS OF THE PRESENCE OF A HARDWIRED OR COMMUNICATED SETPOINT. WHEN THE SPACE TEMPERATURE EXCEEDS THE ACTIVE UNOCCUPIED SETPOINT THE VAV SHALL MODULATE FULLY CLOSED.
      (3) OCCUPIED BYPASS: MODE USED TO TEMPORARILY PLACE THE UNIT INTO THE OCCUPIED OPERATION. TENANTS SHALL BE ABLE TO OVERRIDE THE UNOCCUPIED MODE FROM THE SPACE SENSOR. THE OVERRIDE SHALL LAST FOR A MAXIMUM OF 4 HOURS (ADJ.). THE TENANTS SHALL BE ABLE TO CANCEL THE OVERRIDE FROM THE SPACE SENSOR AT ANY TIME. DURING THE OVERRIDE THE UNIT SHALL OPERATE IN OCCUPIED MODE.

3. HEAT/COOL MODE:

   a. THE HEAT/COOL MODE SHALL BE SET BY A COMMUNICATED VALUE OR AUTOMATICALLY BY THE VAV. IN STANDALONE OR AUTO MODE THE VAV SHALL COMPARE THE PRIMARY AIR TEMPERATURE WITH THE CONFIGURED AUTO CHANGEOVER SETPOINT TO DETERMINE IF THE AIR IS "HOT" OR "COLD". HEATING MODE SHALL COMMAND THE VAV TO HEAT ONLY; IT IMPLIES THE PRIMARY AIR TEMPERATURE IS HOT. COOLING MODE SHALL COMMAND THE VAV TO COOL ONLY; IT IMPLIES THE PRIMARY AIR TEMPERATURE IS COLD.

4. HEAT/COOL SETPOINT:

   a. THE SPACE TEMPERATURE SETPOINT SHALL BE DETERMINED EITHER BY A LOCAL (E.G., THUMBWHEEL) SETPOINT, THE VAV DEFAULT SETPOINT OR A COMMUNICATED VALUE. THE VAV SHALL USE THE LOCALLY STORED DEFAULT SETPOINTS WHEN NEITHER A LOCAL SETPOINT NOR COMMUNICATED SETPOINT IS PRESENT. IF BOTH A LOCAL SETPOINT AND COMMUNICATED SETPOINT EXIST, THE VAV SHALL USE THE COMMUNICATED VALUE.

5. COOLING MODE:

   a. WHEN THE UNIT IS IN COOLING MODE, THE VAV CONTROLLER SHALL MAINTAIN THE SPACE TEMPERATURE AT THE ACTIVE COOLING SETPOINT BY MODULATING THE AIRFLOW BETWEEN THE ACTIVE COOLING MINIMUM AIRFLOW SETPOINT TO THE MAXIMUM COOLING AIRFLOW SETPOINT. BASED ON THE VAV CONTROLLER OCCUPANCY MODE, THE ACTIVE COOLING SETPOINT SHALL BE ONE OF THE FOLLOWING:

SETPOINT	DEFAULT VALUE
OCCUPIED COOLING SETPOINT	74.0 DEG. F
UNOCCUPIED COOLING SETPOINT	85.0 DEG. F
OCCUPIED STANDBY COOLING SETPOINT	78.0 DEG. F
OCCUPIED MIN COOLING AIRFLOW SETPOINT	SEE VAV SCHEDULE
OCCUPIED MAX COOLING AIRFLOW SETPOINT	SEE VAV SCHEDULE

   b. THE VAV SHALL USE THE MEASURED SPACE TEMPERATURE AND THE ACTIVE COOLING SETPOINT TO DETERMINE THE REQUESTED COOLING CAPACITY OF THE UNIT. THE OUTPUTS WILL BE CONTROLLED BASED ON THE UNIT CONFIGURATION AND THE REQUESTED COOLING CAPACITY.

6. HEATING MODE:

   a. WHEN THE UNIT IS IN HEATING MODE, THE VAV CONTROLLER SHALL MAINTAIN THE SPACE TEMPERATURE AT THE ACTIVE HEATING SETPOINT BY MODULATING THE AIRFLOW BETWEEN THE ACTIVE HEATING MINIMUM AIRFLOW SETPOINT TO THE MAXIMUM HEATING AIRFLOW SETPOINT. BASED ON THE VAV CONTROLLER OCCUPANCY MODE, THE ACTIVE HEATING SETPOINT SHALL BE ONE OF THE FOLLOWING:

SETPOINT	DEFAULT VALUE
OCCUPIED HEATING SETPOINT	71.0 DEG. F
UNOCCUPIED HEATING SETPOINT	60.0 DEG. F
OCCUPIED STANDBY HEATING SETPOINT	67.0 DEG. F
OCCUPIED MIN HEATING AIRFLOW SETPOINT	SEE VAV SCHEDULE
OCCUPIED MAX HEATING AIRFLOW SETPOINT	SEE VAV SCHEDULE

   b. THE VAV CONTROLLER SHALL USE THE MEASURED SPACE TEMPERATURE AND THE ACTIVE HEATING SETPOINT TO DETERMINE THE REQUESTED HEATING CAPACITY OF THE UNIT. THE OUTPUTS WILL BE CONTROLLED BASED ON THE UNIT CONFIGURATION AND THE REQUESTED HEATING CAPACITY.

7. CONTINUOUS FAN CONTROL:

   a. THE VAV FAN SHALL OPERATE CONTINUOUSLY IN ALL OCCUPIED MODES. DURING THE UNOCCUPIED MODE, THE PRIMARY AIR VALVE SHALL MODULATE FULLY CLOSED. THE TERMINAL FAN AND HEAT SHALL CYCLE AS NEEDED TO MAINTAIN A REDUCED SPACE TEMPERATURE.

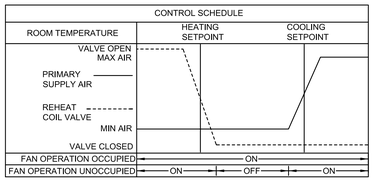
8. REHEAT CONTROL:

   a. REHEAT SHALL ONLY BE ALLOWED WHEN THE PRIMARY AIR TEMPERATURE IS 5.0 DEG. F BELOW THE CONFIGURED REHEAT ENABLE SETPOINT OF 70.0 DEG. F (ADJ.). THE REHEAT SHALL BE ENABLED WHEN THE SPACE TEMPERATURE DROPS BELOW THE ACTIVE COOLING SETPOINT AND THE AIRFLOW IS AT THE MINIMUM COOLING AIRFLOW SETPOINT. DURING REHEAT THE VAV SHALL OPERATE AT ITS MINIMUM HEATING AIRFLOW SETPOINT AND ENERGIZE THE HEAT AS FOLLOWS:

   b. HOT WATER REHEAT: IF THE SPACE TEMPERATURE FALLS BELOW THE HEATING SETPOINT, THE HOT WATER REHEAT VALVE SHALL BE MODULATED OPEN AS REQUIRED TO MAINTAIN THE ACTIVE HEATING SETPOINT.

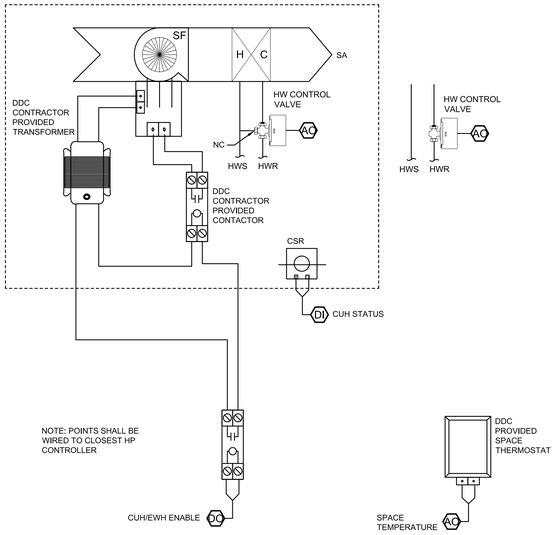
9. SPACE SENSOR FAILURE:

   a. IF THERE IS A FAULT WITH THE OPERATION OF THE ZONE SENSOR AN ALARM SHALL BE ANNUNCIATED AT THE BAS. SPACE SENSOR FAILURE SHALL CAUSE THE VAV TO DRIVE THE DAMPER TO MINIMUM AIR FLOW IF THE VAV IS IN THE OCCUPIED MODE, OR DRIVE IT CLOSED IF THE VAV IS IN THE UNOCCUPIED MODE. THE SERIES FAN SHALL BE ENABLED AND THE REHEAT WILL BE DISABLED.



POINT NAME	Hardware Points AI	AO	DI	DO	Software Points AV	DV	Trend	Alarm	Show on Graphic	DEFAULT VALUE
SPACE TEMPERATURE	X						X	X	X	
SPACE SETPOINT					X		X		X	
DISCHARGE AIR TEMPERATURE	X						X	X	X	
FAN			X				X	X	X	
HOT WATER VALVE				X			X	X	X	
PRIMARY AIR CFM	X								X	
BIPOLAR IONIZATION MONITORING			X				X	X	X	
OCCUPANCY						X				
OCCUPIED COOLING SETPOINT					X					74°F
OCCUPIED HEATING SETPOINT					X					71°F
UNOCCUPIED COOLING SETPOINT					X					85°F
UNOCCUPIED HEATING SETPOINT					X					60°F

NOTE: THE GRAPHICS SHALL INCLUDE THE SETPOINT DISPLAY FOR EACH CONTROLLED OR MONITORED VARIABLE.



HOT WATER CABINET UNIT HEATER/UNIT HEATER

NOT TO SCALE

UNIT HEATERS / POINT NAME	Hardware Points AI	AO	DI	DO	Software Points AV	DV	TREND	ALARM	SHOW ON GRAPHIC
ENABLE/DISABLE				X			X	X	X

UNIT HEATERS

A. UNIT HEATERS SHALL BE CONTROLLED BY WALL-MOUNTED THERMOSTATS. ON A FALL IN SPACE TEMPERATURE BELOW SETPOINT, THE FAN SHALL BE STARTED AND THE FAN SHALL BE STARTED AND THE HOT WATER HEATING COIL CONTROL VALVE SHALL FULLY OPEN. ON A RISE IN SPACE TEMPERATURE, THE REVERSE SHALL OCCUR. THE INITIAL SETPOINT SHALL BE 65°F. THE DDC SHALL PROVIDE A DO POINT(S) FOR ENABLING/DISABLING THE UNIT FANS.

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
AUTOMATIC TEMPERATURE CONTROLS

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: JAR
CHECKED BY: KDA

M6.1

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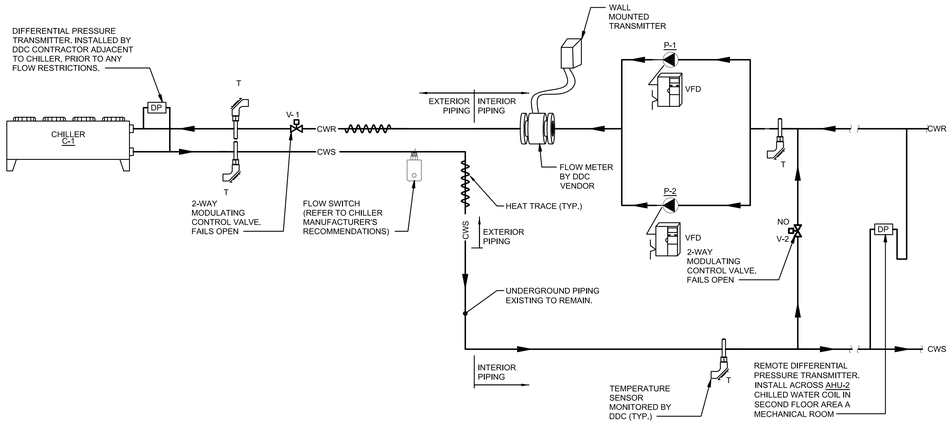

CHILLED WATER SYSTEM DIAGRAM

NOT TO SCALE

GRAPHICAL USER INTERFACE MAIN SCREEN

POINT NAME	HARDWARE POINTS AI	AO	BI	BO	SOFTWARE POINTS AV	BV	TREND	ALARMS NON-CRITICAL ALARM PRIORITY 6	NON-CRITICAL ALARM PRIORITY 5	RENO LESS CRITICAL ALARM PRIORITY 4	RENO CRITICAL ALARM PRIORITY 3	SHOW ON GRAPHIC
CHILLED WATER DIFFERENTIAL PRESSURE	X			X			X	X				X
CHILLED WATER FLOW	X						X					X
CHILLED WATER RETURN TEMP	X						X	X				X
CHILLED WATER SUPPLY TEMP	X						X	X(<50°F)			X(>55°F)	X
CHILLED WATER BYPASS VALVE, V-2		X					X					X
CHILLED WATER PUMP 1 VFD SPEED		X					X					X
CHILLED WATER PUMP 1 VFD FAULT			X							X		X
CHILLED WATER PUMP 1 STATUS			X				X					X
CHILLED WATER PUMP 1 START/STOP				X			X					X
CHILLED WATER PUMP 1 FAILURE						X					X	X
CHILLED WATER PUMP 1 COMMAND/STATUS MISMATCH						X			X			X
CHILLED WATER PUMP 1 RUNTIME	X							X				X
CHILLED WATER PUMP 2 VFD SPEED		X					X					X
CHILLED WATER PUMP 2 VFD FAULT			X							X		X
CHILLED WATER PUMP 2 STATUS POSITION, V-1			X				X					X
CHILLED WATER PUMP 2 START/STOP				X			X					X
CHILLED WATER PUMP 2 FAILURE						X					X	X
CHILLED WATER PUMP 2 RUNNING IN HAND						X			X			X
CHILLED WATER PUMP 2 RUNTIME	X							X				X
CHILLED WATER SUPPLY TEMP SETPOINT RESET		X					X					X
CHILLED WATER ISOLATION VALVE STATUS			X				X					X
CHILLER STATUS			X				X					X
CHILLED WATER ISOLATION VALVE POSITION, V-1				X								X
CHILLER ENABLE				X								X
CHILLED WATER DIFFERENTIAL PRESSURE SETPOINT					X		X					X
CHILLED WATER FLOW SETPOINT					X		X					X
OUTSIDE AIR TEMP	X											X
CHILLED WATER ISOLATION VALVE FAILURE						X					X	X
CHILLED WATER ISOLATION VALVE IN HAND						X			X			X
CHILLER FAILURE						X					X	X
CHILLER RUNNING IN LOCAL MODE						X			X			X
CHILLER RUNTIME	X							X				X
HIGH CHILLED WATER DIFFERENTIAL PRESSURE					X			X			X	X
HIGH CHILLED WATER SUPPLY TEMP					X					X	X	X
LOW CHILLED WATER DIFFERENTIAL PRESSURE (CHILLER)					X						X	X
LOW CHILLED WATER FLOW (CHILLER)					X						X	X
LOW CHILLED WATER SUPPLY TEMP (CHILLER)					X				X(<37°F)			X
HEAT TRACE - ENABLE				X							X	X

NOTE: THE GRAPHICS SHALL INCLUDE THE SETPOINT DISPLAY FOR EACH CONTROLLED VARIABLE.

CHILLED WATER PLANT DDC POINTS LIST

CHILLED WATER PLANT CONTROL

A. SYSTEM SCHEDULING: THE DDC SYSTEM WILL START THE CHILLER SYSTEM BASED UPON TIME OF DAY SCHEDULING APPLICATION WITH THE OPTION TO USE OUTSIDE AMBIENT TEMPERATURE LOCKOUT. THE CHILLER PLANT SHALL START IN RESPONSE TO THE OPTIMUM START, NIGHT SETBACK, TIMED OVERRIDE OPERATION OR COOLING DEMAND OF ANY SYSTEM AIR HANDLER.

B. CHILLER SEQUENCING: THE DDC SYSTEM SHALL START OR STOP THE CHILLER BASED UPON SYSTEM LOAD.

C. WHEN THE CHILLED WATER SYSTEM IS ENABLED BY THE DDC SYSTEM, THE CHILLER SYSTEM CONTROL WILL OPEN THE CHILLER'S ISOLATION VALVES AND ENABLE THE LEAD CHILLED WATER PUMP, PROVE FLOW THROUGH THE EVAPORATOR, AND START THE CHILLER AFTER CHILLED WATER FLOW IS PROVEN.

D. THE DDC SYSTEM SHALL START, STOP, AND MODULATE THE CHILLER BASED UPON SYSTEM LOAD.

E. CHILLED WATER PUMP CONTROL (TYPICAL FOR P-1 & P-2):

1. THE DDC CONTROL SYSTEM FOR THE CHILLED WATER PUMPS SHALL BE DESIGNED TO START AND STOP THE PUMPS AND MODULATE THEIR SPEED AS REQUIRED BY SYSTEM DEMANDS. THE SYSTEM SHALL MAINTAIN DIFFERENTIAL PRESSURE AT A REMOTE LOCATION FOR THE CHILLED WATER SYSTEM AS INDICATED ON THE PLANS. THE SETPOINT SHALL BE USED TO PROPERLY CONTROL THE PRESSURE IN THE SYSTEM AND OPTIMIZE THE PUMP OPERATION AND SYSTEM OPERATION. THE DDC CONTROLLER SHALL HAVE FIELD PROGRAMMABLE INDEPENDENT SETPOINTS, THE VALUE OF WHICH SHALL BE THE OPTIMUM DIFFERENTIAL PRESSURE AS DESIGNED FOR EACH REMOTE LOCATION AND AS SHOWN ON THE PLANS PROVIDED MORE THAN ONE IS REQUIRED.

2. DOWNSTREAM DIFFERENTIAL PRESSURE CONTROL: AFTER THE LEAD CHILLED WATER PUMP HAS STARTED, AS PREVIOUSLY DESCRIBED, THE DDC WILL CONTROL PUMP SPEED TO MAINTAIN DOWNSTREAM CHILLED WATER DIFFERENTIAL PRESSURE AT ITS SETPOINT. THE DOWNSTREAM DIFFERENTIAL PRESSURE TRANSMITTER WILL INPUT THE DOWNSTREAM HEATING WATER DIFFERENTIAL PRESSURE TO THE DDC. SHOULD THE DOWNSTREAM CHILLED WATER DIFFERENTIAL PRESSURE BEGIN TO FALL BELOW ITS SETPOINT, THE DDC WILL SIGNAL THE PUMP VFD TO INCREASE PUMP SPEED. SHOULD THE DOWNSTREAM CHILLED WATER DIFFERENTIAL PRESSURE BEGIN TO RISE ABOVE ITS SETPOINT, THE REVERSE WILL OCCUR.

3. THE LEAD PUMP SHALL RUN FIRST. ON FAILURE OF THE LEAD PUMP, THE STANDBY PUMP SHALL RUN AND THE LEAD PUMP SHALL TURN OFF.

4. THE DESIGNATED LEAD PUMP SHALL ROTATE UPON ONE OF THE FOLLOWING CONDITIONS (USER SELECTABLE):

   a. MANUALLY THROUGH A SOFTWARE SWITCH
   b. IF PUMP RUNTIME (ADJ.) IS EXCEEDED
   c. DAILY
   d. WEEKLY
   e. MONTHLY

5. THE DDC CONTROL SYSTEM FOR THE CHILLED WATER SYSTEM SHALL ALSO BE DESIGNED TO MAINTAIN MINIMUM FLOW ACROSS THE CHILLER'S EVAPORATOR BARREL DURING ALL HOURS OF OPERATION. THE CONTROL SYSTEM SHALL MONITOR FLOW ACROSS EACH CHILLER BARREL AND CONTROL A MINIMUM BYPASS FLOW CONTROL VALVE. THE VALVE SHALL BE DESIGNED AND CONTROLLED TO MAINTAIN BOTH MINIMUM EVAPORATOR BARREL FLOW AND RATE OF CHANGE OF FLOW ACROSS HE EVAPORATOR BARREL FOR THE CHILLER. THE CONTROL MUST BE INTEGRATED WITH THE CHILLER SYSTEM CONTROLS TO PROVIDE COMPLETE OPTIMIZATION OF THE CHILLER PLANT.

F. CHILLED WATER TEMPERATURE RESET: CHILLED WATER TEMPERATURE SHALL BE 42 °F WHEN THE MAXIMUM POSITION OF ANY CHILLED WATER CONTROL VALVE IS OPEN GREATER THAN 85%. WHEN ALL OF THE CHILLED WATER VALVE POSITIONS ARE OPEN LESS THAN 25% THE CHILLED WATER TEMPERATURE SHALL BE 46ºF. THE TEMPERATURE SHALL RESET 0.5ºF EVERY TEN MINUTES. ON STARTUP, THE INITIAL CHILLED WATER TEMPERATURE SHALL BE 42ºF.

G. CHILLER FREEZE PROTECTION: WHEN THE OUTSIDE AIR TEMPERATURE DROPS TO 32ºF OR BELOW, START THE LEAD CHILLED WATER PUMP AT SLOW SPEED AND OPEN THE BYPASS VALVE. ALL AIR HANDLER CHILLED WATER VALVES SHALL REMAIN CLOSED. THE CHILLER HEATERS SHALL BE ENABLED BY THE CHILLER'S INTERNAL CONTROLS.

H. WHEN RUNTIME OF ONE PUMP EXCEEDS THAT OF THE OTHER PUMP OR CHILLER BY 400 HOURS (ADJ.), DDC SYSTEM SHALL ISSUE PRIORITY 6 ALARM.

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
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AUTOMATIC TEMPERATURE CONTROLS

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: JAR
CHECKED BY: KDA

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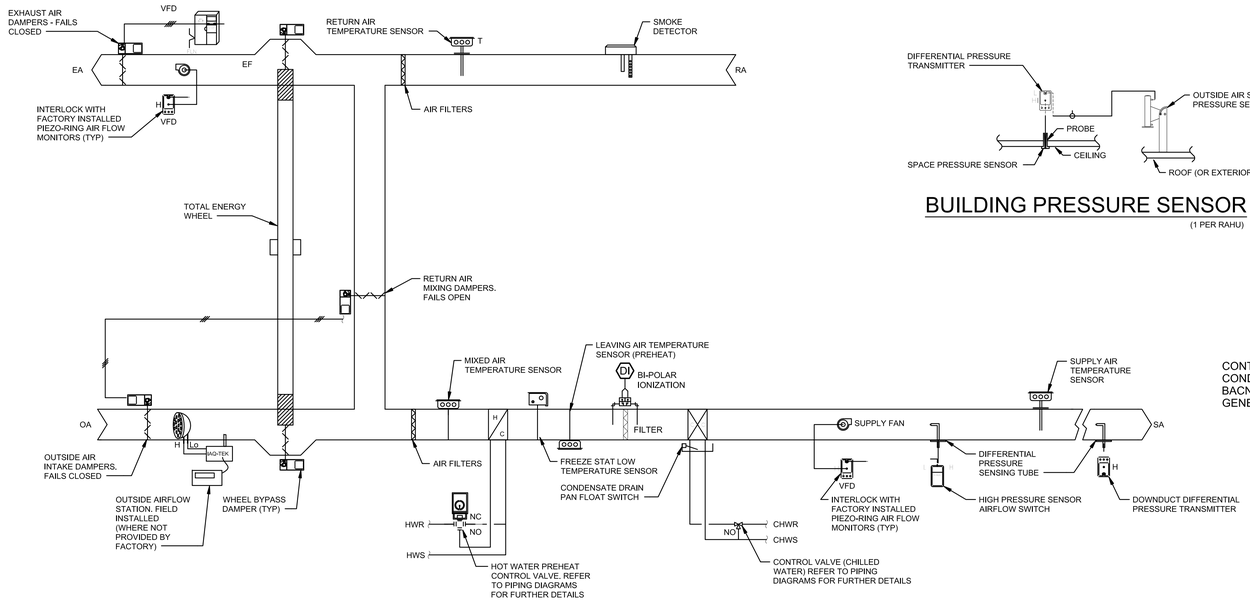
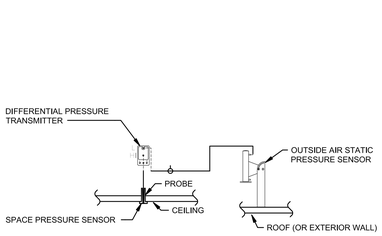
DATE: 12/20/2024



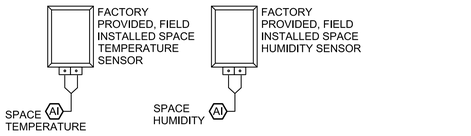
AHU 1, 2 AND 6 DDC CONTROLS DIAGRAM

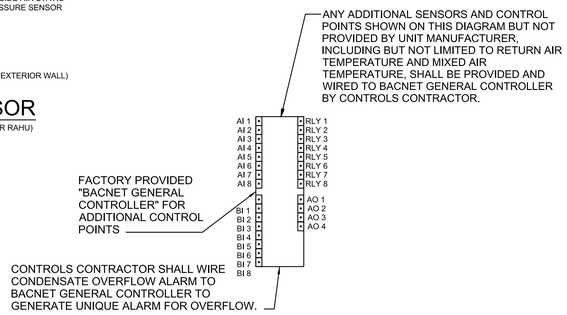
NOT TO SCALE



BUILDING PRESSURE SENSOR

(1 PER RAHU)





GRAPHICAL USER INTERFACE MAIN SCREEN

POINT NAME	HARDWARE POINTS AI	AO	DI	DO	SOFTWARE POINTS AV	DV	TREND	ALARMS NON-CRITICAL ALARM RENO	CRITICAL ALARM RENO	SHOW ON GRAPHIC
OUTSIDE AIR DAMPER		X					X			X
RETURN AIR DAMPER		X					X			X
MIXING DAMPER		X					X			X
EXHAUST AIR DAMPER		X					X			X
OUTSIDE AIR CFM	X						X			X
EXHAUST FAN CFM	X						X			X
SUPPLY FAN CFM	X						X			X
MIXED AIR TEMPERATURE	X						X		X	X
SUPPLY FAN SPEED		X					X			X
EXHAUST FAN START/STOP				X			X			X
EXHAUST FAN STATUS			X				X			X
EXHAUST FAN VFD FAULT			X				X		X	X
EXHAUST FAN SPEED		X					X			X
DOWN DUCT STATIC PRESSURE	X						X	X		X
SUPPLY STATIC PRESSURE HIGH LIMIT			X				X		X	X
BUILDING STATIC PRESSURE	X						X			X
LOW LIMIT THERMOSTAT			X				X		X	X
SMOKE DETECTION			X				X		X	X
BIPOLAR IONIZATION MONITORING			X				X	X		X
SUPPLY STATIC PRESSURE SETPOINT					X		X			X
SUPPLY AIR TEMPERATURE SETPOINT					X		X			X
PREHEAT AIR TEMPERATURE SETPOINT					X		X			X
FAILED POINTS					X			X		X
LOW TEMPERATURE DISCHARGE (+/- 5 FROM SETPOINT)					X			X		X
ROOM TEMPERATURE DEVIATION FROM SETPOINT					X			X		X
CONDENSATE OVERFLOW PROTECTION			X				X		X	X

NOTE: 1. THE GRAPHICS SHALL INCLUDE THE SETPOINT DISPLAY FOR EACH CONTROLLED VARIABLE.
2. EXHAUST FANS LOCATED IN EACH AIR HANDLER ZONE SHALL BE SHOWN ON THE AIR HANDLER GRAPHIC PAGE.

AHU 1, 2 AND 6 POINTS LIST

VAV AIR HANDLING UNIT

A. AT OCCUPANCY TIME, THE DDC CONTROLLER SHALL MODULATE THE OUTSIDE AIR DAMPER OPEN TO MAINTAIN A MINIMUM OUTSIDE AIR CFM AS MEASURED BY THE AIRFLOW STATION, CLOSING THE RETURN AIR DAMPER A PROPORTIONAL AMOUNT.

B. ON A FALL IN PREHEAT DISCHARGE TEMPERATURE TO THE SETPOINT OF THE DDC CONTROLLER, THE DDC CONTROLLER SHALL MODULATE THE HOT WATER HEATING COIL CONTROL VALVE TO MAINTAIN SETPOINT.

C. ON A RISE IN SUPPLY AIR TEMPERATURE TO THE SETPOINT OF THE DDC CONTROLLER, THE DDC CONTROLLER SHALL MODULATE THE HOT WATER VALVE CLOSED. ON A FURTHER RISE IN DISCHARGE AIR TEMPERATURE, THE DDC SHALL CLOSE THE HOT WATER VALVE. ON A FURTHER RISE IN DISCHARGE AIR TEMPERATURE THE DDC CONTROLLER SHALL MODULATE THE OUTSIDE AIR DAMPER OPEN CLOSING THE RETURN AIR DAMPER A PROPORTIONAL AMOUNT FOR FREE COOLING. WHENEVER THE SETTING OF THE MIXED AIR TEMPERATURE LOW LIMIT IS REACHED, THE DDC CONTROLLER SHALL MODULATE THE OUTSIDE AIR DAMPER CLOSED TO ITS PRESET MINIMUM POSITION OPENING THE RETURN AIR DAMPER A PROPORTIONAL AMOUNT. WHENEVER THE OUTSIDE AIR TEMPERATURE RISES ABOVE THE SETPOINT OF THE DDC CONTROLLER, THE DDC CONTROLLER SHALL DISABLE THE ECONOMIZER CYCLE. ON A FURTHER RISE IN SUPPLY AIR TEMPERATURE, THE DDC CONTROLLER SHALL MODULATE THE CHILLED WATER VALVE OPEN TO THE COIL.

D. AT OCCUPANCY TIME THE SUPPLY FAN SHALL BE ENABLED. THE DDC CONTROLLER SHALL SUPPLY A VOLTAGE INPUT TO THE SUPPLY AIR FAN VARIABLE FREQUENCY DRIVES (VFD) TO MAINTAIN DUCT STATIC PRESSURE SETPOINT AS MEASURED BY THE STATIC SENSOR LOCATED IN THE SUPPLY AIR DUCT. THE DDC CONTROLLER SHALL CONTINUOUSLY MONITOR THE PRIMARY AIR VALVE POSITION ON ALL TERMINAL VAV BOXES AND RESET THE SUPPLY DUCT STATIC PRESSURE SETPOINT SO THAT AT LEAST ONE TERMINAL VAV BOXES PRIMARY AIR VALVE IS AT LEAST 95% OPEN. WHENEVER THE DISCHARGE STATIC PRESSURE RISES ABOVE THE STATIC HIGH-PRESSURE SETPOINT, AS SENSED BY THE STATIC PRESSURE FAN SWITCH LOCATED IN THE FAN DISCHARGE, THE SUPPLY AND EXHAUST FAN SHALL BE DISABLED AND A MANUAL RESET WILL BE REQUIRED.

E. ON A RISE IN SPACE PRESSURE TO THE SETPOINT OF THE DDC CONTROLLER, THE DDC CONTROLLER SHALL OPEN THE EXHAUST AIR DAMPER ENABLING THE EXHAUST FAN VFD TO MAINTAIN SPACE PRESSURE SETPOINT AS MEASURED BY THE STATIC PRESSURE SENSOR LOCATED IN THE SPACE. ON A FALL IN SPACE PRESSURE TO THE SETPOINT OF THE DDC CONTROLLER, THE REVERSE SEQUENCE SHALL OCCUR.

F. FREEZE PROTECTION: SHOULD THE AIR TEMPERATURE INSIDE THE UNIT CABINET DROP TO 40°F (ADJ) OR BELOW, THE LOW LIMIT THERMOSTAT SHALL DISABLE THE SUPPLY FAN, THE OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL CLOSE, THE RETURN DAMPER SHALL OPEN, AND AN ALARM GENERATED. THE HOT WATER CONTROL VALVES SHALL MODULATE OPEN TO MAINTAIN MINIMUM CABINET TEMPERATURE.

G. ON DETECTION OF PRODUCTS OF COMBUSTION, THE SMOKE DETECTOR SHALL STOP THE UNIT SUPPLY AIR FAN AND EXHAUST FAN, AND SEND A SIGNAL TO ALL ASSOCIATED VAV BOXES TO DISABLE THE BOX FANS.

H. UNOCCUPIED MODE: WHEN THE BUILDING IS INDEXED FOR UNOCCUPIED OPERATION, THE DDC SHALL DISABLE THE SUPPLY AND EXHAUST FANS, CLOSE THE CHILLED WATER CONTROL VALVE, CLOSE THE OUTSIDE AIR AND EXHAUST AIR DAMPERS AND OPEN THE RETURN AIR DAMPER.

I. NIGHT SET-BACK: WHEN THE BUILDING IS INDEXED FOR UNOCCUPIED OPERATION, THE DDC SHALL DISABLE THE SUPPLY AND EXHAUST FANS, MODULATE THE HOT WATER CONTROL VALVE IN ACCORDANCE WITH PARAGRAPH F ABOVE, CLOSE THE OUTSIDE AIR AND EXHAUST AIR DAMPERS AND OPEN THE RETURN AIR DAMPER. WHEN THE SPACE TEMPERATURE FALLS BELOW 60ºF (ADJ.), THE DDC SHALL CYCLE THE LOCAL FAN POWERED TERMINAL UNITS TO MAINTAIN SPACE TEMPERATURE.

J. NIGHT SET-UP: WHEN THE SPACE TEMPERATURE RISES TO 85ºF (ADJ.) OR ABOVE, THE DDC SHALL ENABLE THE SUPPLY FAN AND MODULATE THE CHILLED WATER CONTROL VALVE TO MAINTAIN COOLING SETPOINT. WHEN THE SPACE TEMPERATURE FALLS TO 80ºF (ADJ.), THE DDC SHALL DISABLE THE SUPPLY FAN AND CLOSE THE CHILLED WATER CONTROL VALVE.

K. WARM-UP: WHEN THE OPTIMAL START PROGRAM CALLS FOR WARM-UP OPERATION, THE DDC SHALL ENABLE THE SUPPLY FAN AND MODULATE THE HOT WATER HEATING COIL VALVE FULLY OPEN, THE UNIT SHALL OPERATE WITH 100% RETURN AIR UNTIL SETPOINT IS REACHED.

L. COOL-DOWN: WHEN THE OPTIMAL START PROGRAM CALLS FOR COOL-DOWN OPERATION, THE DDC SHALL ENABLE THE SUPPLY FAN AND MODULATE OPEN THE CHILLED WATER CONTROL VALVE TO MAINTAIN SUPPLY COOLING SET POINT. THE UNIT SHALL OPERATE WITH 100% RETURN AIR UNTIL SETPOINT IS REACHED.

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
AUTOMATIC TEMPERATURE CONTROLS

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
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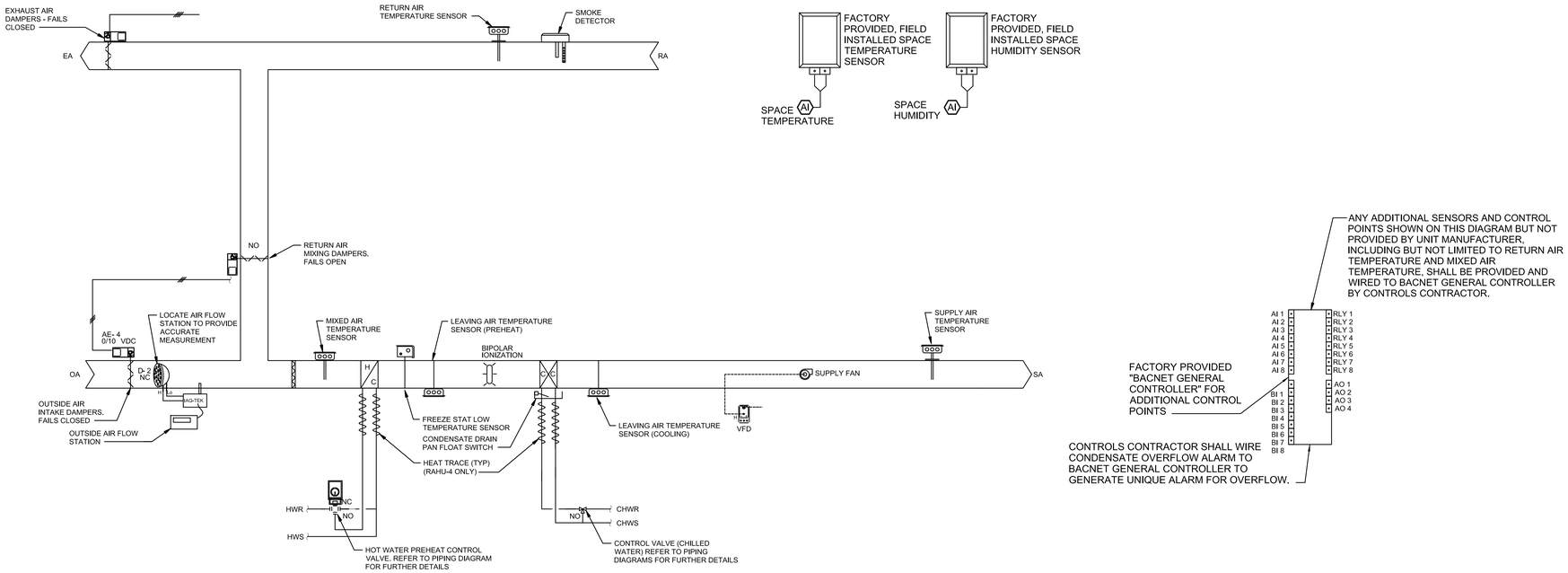
DRAWN BY: JAR
CHECKED BY: KDA

M6.3

DATE: 12/20/2024



AHU-7 AND RAHU-4 DDC CONTROL DIAGRAM

NOT TO SCALE

GRAPHICAL USER INTERFACE MAIN SCREEN

POINT NAME	HARDWARE POINTS AI	AO	DI	DO	SOFTWARE POINTS AV	DV	TREND	ALARMS NON-CRITICAL ALARM PRIORITY 6	NON-CRITICAL ALARM PRIORITY 5	RENO LESS CRITICAL ALARM PRIORITY 4	RENO CRITICAL ALARM PRIORITY 3	SHOW ON GRAPHIC
MIXED AIR DAMPER		X					X					X
EXHAUST AIR DAMPER		X					X					X
OUTSIDE AIR CFM	X						X					X
SUPPLY FAN CFM	X						X					X
MIXED AIR TEMPERATURE	X						X		X			X
PREHEAT TEMPERATURE	X						X					X
RETURN AIR TEMPERATURE	X						X					X
HOT WATER VALVE		X					X					X
CHILLED WATER VALVE		X					X					X
SUPPLY TEMPERATURE	X						X					X
SUPPLY FAN START/STOP				X			X					X
SUPPLY FAN STATUS			X				X				X	X
SUPPLY FAN VFD FAULT			X				X				X	X
SUPPLY FAN SPEED		X					X					X
LOW LIMIT THERMOSTAT			X				X				X	X
SMOKE DETECTION			X				X				X	X
BIPOLAR IONIZATION MONITORING			X				X		X			X
SPACE CO2	X						X		X			X
SPACE TEMPERATURE	X						X					X
SPACE TEMPERATURE OVERRIDE SETPOINT					X		X					X
SPACE TEMPERATURE SETPOINT					X		X					X
SPACE HUMIDITY	X						X					X
SPACE HUMIDITY SETPOINT					X		X					X
HEAT TRACE (RAHU-4 ONLY)			X								X	X
FAILED POINTS					X			X				X
LOW TEMPERATURE DISCHARGE (+/-5 FROM SETPOINT)					X							X
ROOM TEMPERATURE DEVIATION (+/-5 FROM SETPOINT)					X							X
CONDENSER OVERFLOW PROTECTION			X								X	X

NOTE: 1. THE GRAPHICS SHALL INCLUDE THE SETPOINT DISPLAY FOR EACH CONTROLLED VARIABLE.
2. EXHAUST FANS LOCATED IN EACH AIR HANDLER ZONE SHALL BE SHOWN ON THE AIR HANDLER GRAPHIC PAGE.

AHU-7 AND RAHU-4 POINTS LIST

CONSTANT VOLUME ROOFTOP AIR HANDLING UNIT(S) CONTROL (AHU-7 AND RAHU-4)

A. OCCUPIED MODE: WHEN THE BUILDING IS INDEXED FOR OCCUPIED OPERATION, AND IF THE UNIT IS NOT RUNNING ON WARM-UP, COOL-DOWN, OR OVERRIDE, THE DDC WILL OPEN THE OUTDOOR AIR DAMPER AND ENABLE THE SUPPLY FAN. THE DDC SHALL OPEN THE EXHAUST AIR DAMPER. THE UNIT ' S OUTSIDE AIR DAMPER SHALL BE OPENED TO THE " OCCUPIED " POSITION. DAMPER POSITIONS SHALL BE DETERMINED BY THE TAB CONTRACTOR.

B. TEMPERATURE CONTROL: ON A FALL IN SPACE TEMPERATURE BELOW SETPOINT, THE DDC SHALL MODULATE THE HOT WATER PREHEAT COIL CONTROL VALVE OPEN. ON A CONTINUED FALL IN TEMPERATURE THE DDC SHALL MODULATE THE HOT WATER PREHEAT CONTROL VALVE OPEN. ON A RISE IN SPACE TEMPERATURE, THE DDC SHALL MODULATE THE CONTROL VALVE CLOSED. ON A FURTHER RISE IN THE SPACE TEMPERATURE ABOVE SETPOINT (ADJ.), THE DDC SHALL MODULATE THE CHILLED WATER CONTROL VALVE FULLY OPEN. ON A FALL IN SPACE TEMPERATURE, THE REVERSE SHALL OCCUR.

C. FREEZE PROTECTION: SHOULD THE AIR TEMPERATURE INSIDE THE UNIT CABINET DROP TO 40°F OR BELOW, THE LOW LIMIT THERMOSTAT SHALL DISABLE THE SUPPLY FAN, THE OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL CLOSE, THE RETURN DAMPER SHALL OPEN, AND AN ALARM GENERATED. THE HOT WATER CONTROL VALVES SHALL MODULATE OPEN TO MAINTAIN MINIMUM CABINET TEMPERATURE.

D. SMOKE CONTROL: SHOULD PRODUCTS OF COMBUSTION BE DETECTED, THE SUPPLY FAN WILL BE DISABLED, THE OUTDOOR AIR AND EXHAUST AIR DAMPERS WILL BE CLOSED, AND AN ALARM GENERATED.

E. HUMIDITY CONTROL: ON A RISE IN SPACE HUMIDITY TO THE SETPOINT OF THE SPACE HUMIDISTAT SENSOR, THE DDC CONTROLLER SHALL MODULATE THE COOLING COIL CONTROL VALVE TO MEET HUMIDITY SETPOINT. SHOULD THE DEHUMIDIFICATION PROCESS CAUSE THE SPACE TO OVERCOOL, THE DDC CONTROLLER SHALL MODULATE THE SUPPLY FAN VFD TO SLOW THE FAN. ONCE THE FAN HAS REACHED EITHER THE 30% WIDE OPEN POSITION, OR THE SCHEDULED MINIMUM VENTILATION RATE, WHICHEVER IS HIGHER, THEN THE DDC CONTROLLER SHALL MODULATE THE HOT WATER REHEAT COIL VALVE TO MAINTAIN THE SPACE TEMPERATURE SETPOINT.

F. UNOCCUPIED MODE: WHEN THE BUILDING IS INDEXED FOR UNOCCUPIED OPERATION, THE DDC SHALL DISABLE THE SUPPLY FAN, CLOSE THE CHILLED WATER AND HOT WATER CONTROL VALVES, CLOSE THE OUTSIDE AIR AND EXHAUST AIR DAMPERS, AND OPEN THE RETURN AIR DAMPER.

G. NIGHT SET-BACK: WHEN THE SPACE TEMPERATURE FALLS BELOW SCHEDULED UNOCCUPIED HEATING SETPOINT (ADJ.), THE DDC SHALL ENABLE THE SUPPLY FAN AND MODULATE THE HOT WATER HEATING COIL CONTROL VALVE OPEN. WHEN THE SPACE TEMPERATURE RISES TO 65°F (ADJ.), THE DDC SHALL MODULATE THE HOT WATER CONTROL VALVE CLOSED AND DISABLE THE SUPPLY FAN.

H. NIGHT SET-UP: WHEN THE SPACE TEMPERATURE RISES TO 5 DEG F ABOVE SCHEDULED UNOCCUPIED COOLING SETPOINT (ADJ.) OR ABOVE, THE DDC SHALL ENABLE THE SUPPLY FAN AND MODULATE OPEN THE CHILLED WATER CONTROL VALVE TO MAINTAIN SUPPLY COOLING SET POINT. WHEN THE SPACE TEMPERATURE FALLS TO BELOW SCHEDULED UNOCCUPIED COOLING SETPOINT (ADJ.), THE DDC SHALL DISABLE THE SUPPLY FAN AND CLOSE THE CHILLED WATER CONTROL VALVE.

I. WARM-UP: WHEN THE OPTIMAL START PROGRAM CALLS FOR WARM-UP OPERATION, THE DDC SHALL ENABLE THE SUPPLY FAN AND MODULATE THE HOT WATER CONTROL VALVE TO MAINTAIN SUPPLY HEATING SETPOINT. THE UNIT SHALL OPERATE WITH 100% RETURN AIR UNTIL SETPOINT IS REACHED.

J. COOL-DOWN: WHEN THE OPTIMAL START PROGRAM CALLS FOR COOL-DOWN OPERATION, THE DDC SHALL ENABLE THE SUPPLY FAN AND MODULATE OPEN THE CHILLED WATER CONTROL VALVE TO MAINTAIN COOLING SETPOINT. THE UNIT SHALL OPERATE WITH 100% RETURN AIR UNTIL SETPOINT IS REACHED.

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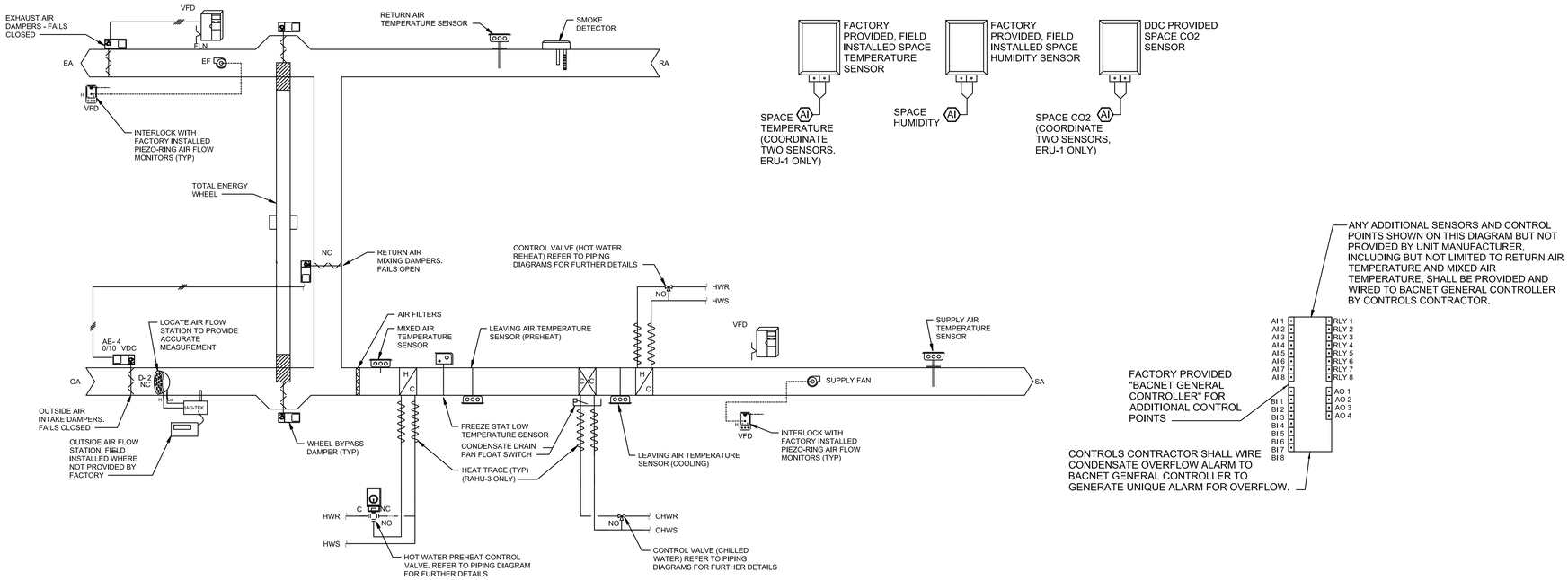

AHU-8, RAHU-3 AND ERU-1 DDC CONTROL DIAGRAM

NOT TO SCALE

GRAPHICAL USER INTERFACE MAIN SCREEN

POINT NAME	HARDWARE POINTS AI	AO	DI	DO	SOFTWARE POINTS AV	DV	TREND	ALARMS NON-CRITICAL ALARM RENO	CRITICAL ALARM RENO	SHOW ON GRAPHIC
EXHAUST AIR DAMPER		X					X			X
WHEEL BYPASS DAMPER (TYP OF 2)		X					X			X
RETURN AIR BYPASS DAMPER		X					X			X
OUTSIDE AIR CFM	X						X			X
EXHAUST FAN CFM	X						X			X
SUPPLY FAN CFM	X						X			X
MIXED AIR TEMPERATURE	X						X			X
PREHEAT TEMPERATURE	X						X			X
RETURN AIR TEMPERATURE	X						X			X
HOT WATER VALVE		X					X			X
CHILLED WATER VALVE		X					X			X
SUPPLY TEMPERATURE	X						X			X
SUPPLY FAN START/STOP				X			X			X
SUPPLY FAN STATUS			X				X			X
SUPPLY FAN VFD FAULT			X				X		X	X
SUPPLY FAN SPEED		X					X			X
EXHAUST FAN START/STOP				X			X			X
EXHAUST FAN STATUS			X				X			X
EXHAUST FAN VFD FAULT			X				X		X	X
EXHAUST FAN SPEED		X					X			X
LOW LIMIT THERMOSTAT			X				X		X	X
SMOKE DETECTION			X				X		X	X
BIPOLAR IONIZATION MONITORING			X				X			X
SPACE CO2	X						X			X
SPACE TEMPERATURE	X						X			X
SPACE TEMPERATURE OVERRIDE SETPOINT					X		X			X
SPACE TEMPERATURE SETPOINT					X		X			X
SPACE HUMIDITY	X						X			X
SPACE HUMIDITY SETPOINT					X		X			X
HEAT TRACE (RAHU-3 ONLY)			X						X	X
FAILED POINTS					X			X		X
LOW TEMPERATURE DISCHARGE (+/-5 FROM SETPOINT)					X			X		X
ROOM TEMPERATURE DEVIATION FROM SETPOINT					X			X		X
CONDENSATE OVERFLOW PROTECTION			X						X	X

NOTE: 1. THE GRAPHICS SHALL INCLUDE THE SETPOINT DISPLAY FOR EACH CONTROLLED VARIABLE.
2. EXHAUST FANS LOCATED IN EACH AIR HANDLER ZONE SHALL BE SHOWN ON THE AIR HANDLER GRAPHIC PAGE.

AHU-8, RAHU-3 AND ERU-1 POINTS LIST

CONSTANT VOLUME 100% OUTSIDE AIR HANDLING UNIT CONTROL (AHU-8, RAHU-3 AND ERU-1)

A. OCCUPIED MODE: WHEN THE BUILDING IS INDEXED FOR OCCUPIED OPERATION, AND IF THE UNIT IS NOT RUNNING ON WARM-UP, COOL-DOWN, OR OVERRIDE, THE DDC WILL OPEN THE OUTDOOR AIR DAMPER AND ENABLE THE SUPPLY FAN. THE DDC SHALL OPEN THE EXHAUST AIR DAMPER. THE UNIT'S OUTSIDE AIR DAMPER SHALL BE OPENED TO THE "OCCUPIED" POSITION. DAMPER POSITIONS SHALL BE DETERMINED BY THE TAB CONTRACTOR.

B. TEMPERATURE CONTROL: ON A FALL IN SPACE TEMPERATURE BELOW SETPOINT, THE DDC SHALL MODULATE THE HOT WATER PREHEAT COIL CONTROL VALVE OPEN. ON A CONTINUED FALL IN TEMPERATURE THE DDC SHALL MODULATE THE HOT WATER PREHEAT CONTROL VALVE OPEN. ON A RISE IN SPACE TEMPERATURE, THE DDC SHALL MODULATE THE CONTROL VALVE CLOSED. ON A FURTHER RISE IN THE SPACE TEMPERATURE ABOVE SETPOINT (ADJ.), THE DDC SHALL MODULATE THE CHILLED WATER CONTROL VALVE FULLY OPEN. ON A FALL IN SPACE TEMPERATURE, THE REVERSE SHALL OCCUR.

C. FREEZE PROTECTION: SHOULD THE AIR TEMPERATURE INSIDE THE UNIT CABINET DROP TO 40°F OR BELOW, THE LOW LIMIT THERMOSTAT SHALL DISABLE THE SUPPLY FAN, THE OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL CLOSE, THE RETURN DAMPER SHALL OPEN, AND AN ALARM GENERATED. THE HOT WATER CONTROL VALVES SHALL MODULATE OPEN TO MAINTAIN MINIMUM CABINET TEMPERATURE.

D. SMOKE CONTROL: SHOULD PRODUCTS OF COMBUSTION BE DETECTED, THE SUPPLY FAN WILL BE DISABLED, THE OUTDOOR AIR AND EXHAUST AIR DAMPERS WILL BE CLOSED, AND AN ALARM GENERATED.

E. HUMIDITY CONTROL: ON A RISE IN SPACE HUMIDITY TO THE SETPOINT OF THE SPACE HUMIDISTAT SENSOR, THE DDC CONTROLLER SHALL MODULATE THE COOLING COIL CONTROL VALVE TO MEET HUMIDITY SETPOINT. SHOULD THE DEHUMIDIFICATION PROCESS CAUSE THE SPACE TO OVERCOOL, THE DDC CONTROLLER SHALL MODULATE THE SUPPLY FAN VFD TO SLOW THE FAN. ONCE THE FAN HAS REACHED EITHER THE 30% WIDE OPEN POSITION, OR THE SCHEDULED MINIMUM VENTILATION RATE, WHICHEVER IS HIGHER, THEN THE DDC CONTROLLER SHALL MODULATE THE HOT WATER REHEAT COIL VALVE TO MAINTAIN THE SPACE TEMPERATURE SETPOINT.

F. UNOCCUPIED MODE: WHEN THE BUILDING IS INDEXED FOR UNOCCUPIED OPERATION, THE DDC SHALL DISABLE THE SUPPLY FAN, CLOSE THE CHILLED WATER AND HOT WATER CONTROL VALVES, CLOSE THE OUTSIDE AIR AND EXHAUST AIR DAMPERS, AND OPEN THE RETURN AIR DAMPER.

G. NIGHT SET-BACK: WHEN THE SPACE TEMPERATURE FALLS BELOW 60°F (ADJ.), THE DDC SHALL ENABLE THE SUPPLY FAN AND MODULATE THE HOT WATER HEATING COIL CONTROL VALVE OPEN. WHEN THE SPACE TEMPERATURE RISES TO 65°F (ADJ.), THE DDC SHALL MODULATE THE HOT WATER CONTROL VALVE CLOSED AND DISABLE THE SUPPLY FAN. THE UNIT SHALL OPERATE WITH 100% RETURN AIR WITH WHEEL OFF IN NIGHT SET-BACK.

H. NIGHT SET-UP: WHEN THE SPACE TEMPERATURE RISES TO 85°F (ADJ.) OR ABOVE, THE DDC SHALL ENABLE THE SUPPLY FAN AND MODULATE OPEN THE CHILLED WATER CONTROL VALVE TO MAINTAIN SUPPLY COOLING SET POINT. WHEN THE SPACE TEMPERATURE FALLS TO 80°F (ADJ.), THE DDC SHALL DISABLE THE SUPPLY FAN AND CLOSE THE CHILLED WATER CONTROL VALVE. THE UNIT SHALL OPERATE WITH 100% RETURN AIR WITH WHEEL OFF IN NIGHT SET-UP.

I. WARM-UP; WHEN THE OPTIMAL START PROGRAM CALLS FOR WARM-UP OPERATION, THE DDC SHALL ENABLE THE SUPPLY FAN AND MODULATE THE HOT WATER CONTROL VALVE TO MAINTAIN SUPPLY HEATING SETPOINT. THE UNIT SHALL OPERATE WITH 100% RETURN AIR UNTIL SETPOINT IS REACHED. THE ENERGY WHEEL SHALL REMAIN OFF DURING THE WARM-UP.

J. COOL-DOWN: WHEN THE OPTIMAL START PROGRAM CALLS FOR COOL-DOWN OPERATION, THE DDC SHALL ENABLE THE SUPPLY FAN AND MODULATE OPEN THE CHILLED WATER CONTROL VALVE TO MAINTAIN COOLING SETPOINT. THE UNIT SHALL OPERATE WITH 100% RETURN AIR UNTIL SETPOINT IS REACHED. THE ENERGY WHEEL SHALL REMAIN OFF DURING THE COOL DOWN.

K. DEMAND CONTROL VENTILATION: AS THE SUPPLY FAN COMMAND VARIES BETWEEN MINIMUM AND MAXIMUM, THE DESIGN OUTSIDE AIR CFM (5,000 CFM FOR RAHU-3, 6,900 CFM FOR AHU-8, AND 1000 CFM FOR ERU-1) AND THE DEMAND CONTROL VENTILATION (DCV) MINIMUM POSITION TARGETS (600 CFM FOR RAHU-3, 1,300 CFM FOR AHU-8, AND 500 CFM FOR ERU-1) SHALL BE CALCULATED LINEARLY BETWEEN THE USER SELECTED SETPOINTS BASED ON THE INSTANTANEOUS SUPPLY FAN SPEED. THE UNIT DESIGN AND DCV MINIMUM POSITION TARGETS SHALL BE USED TO CALCULATION THE ACTIVE OA DAMPER MINIMUM POSITION TARGET BASED ON CO2 LEVELS RELATIVE TO THE ACTIVE DESIGN AND DCV CO2 SETPOINTS. AS THE OA DAMPER CLOSES OR OPENS BASED ON CO2 LEVELS, THE RETURN AIR BYPASS DAMPER SHALL DO THE INVERSE.

L. AHU-8 IS INTENDED TO OPERATE ONLY DURING TIMES OF HIGH OCCUPANCY. AHU-8 SHALL BE INDEXED OFF UNLESS CO2 LEVELS IN THE GYMNASIUM BEGIN TO RISE ABOVE THEIR DESIGN SETPOINTS.

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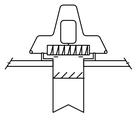
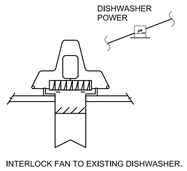


EF-1, 2 AND 4 DIAGRAM

NOT TO SCALE (TYP OF DDC CONTROLLED DOWNBLAST FANS)



EF-9 DIAGRAM

NOT TO SCALE (SERVING DISHWASHER)

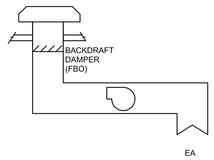
GENERAL EXHAUST FANS

A. UNLESS OTHERWISE INDICATED ON THE EXHAUST FAN SCHEDULE, EXHAUST FANS WILL BE ENABLED/DISABLED THROUGH THE DDC IN CONJUNCTION WITH THEIR ASSOCIATED AIR HANDLER UNITS, OR HEATING AND VENTILATING UNITS. IN ADDITION, THE DDC SHALL MONITOR FAN STATUS UTILIZING CURRENT RELAY SENSORS. WHERE APPLICABLE, SHOULD PRODUCTS OF COMBUSTION BE DETECTED, THE SUPPLY AND EXHAUST FANS WILL BE DISABLED, THE OUTDOOR AIR AND EXHAUST AIR DAMPERS WILL BE CLOSED, AND AN ALARM GENERATED.

B. EXHAUST FANS SERVED BY LINE VOLTAGE THERMOSTATS SHALL NOT BE REQUIRED TO INTERFACE WITH THE DDC SYSTEM.

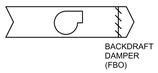
C. TRANSFER FANS SERVED BY LINE VOLTAGE THERMOSTATS DO NOT REQUIRED INTERFACING WITH DDC SYSTEM.

POINT NAME	HARDWARE POINTS AI	AO	DI	DO	SOFTWARE POINTS AV	DV	TREND	ALARMS NON-CRITICAL ALARM PRIORITY 6	NON-CRITICAL ALARM PRIORITY 5	RENO LESS CRITICAL ALARM PRIORITY 4	RENO CRITICAL ALARM PRIORITY 3	SHOW ON GRAPHIC
EXHAUST FANS												X
ENABLE/DISABLE				X								X
STATUS			X				X	X				X



EF-3, 5 AND 8 DIAGRAM

NOT TO SCALE (TYP OF CEILING MOUNTED FANS CONTROLLED BY DDC)



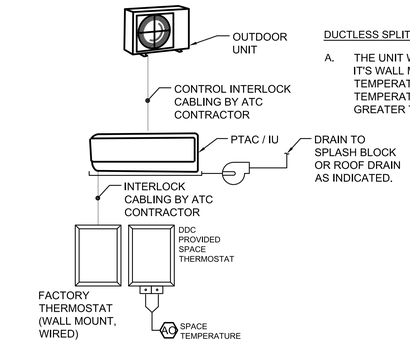
EF-6, 7 AND TF-1 DIAGRAM

NOT TO SCALE (TYPICAL INLINE FAN CONTROLLED BY DDC)

EXHAUST FAN DIAGRAMS

NOT TO SCALE

POINT NAME	MISCELLANEOUS Hardware Points AI	AO	DI	DO	Software Points AV	DV	TREND	ALARM	SHOW ON GRAPHIC
ROOMS WITH DUCTLESS SPLIT SYSTEMS				X					
SPACE TEMPERATURE	X						X	X	X



DUCTLESS SPLIT SYSTEM INDOOR UNIT/PTAC

A. THE UNIT WILL OPERATE IN HEATING OR COOLING MODE AS CONTROLLED BY IT'S WALL MOUNTED THERMOSTAT PROVIDED WITH THE UNIT, A SPACE TEMPERATURE SENSOR MONITORED BY DDC SHALL ALARM ANYTIME SPACE TEMPERATURE RISES ABOVE 85°F OR DROPS BELOW 60°F FOR A PERIOD GREATER THAN 5 MINUTES.

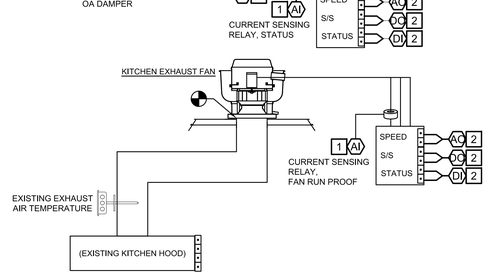
IU/OU DIAGRAM

NOT TO SCALE

KITCHEN VENTILATION SYSTEM
SEQUENCE OF OPERATION

A. REFER TO THE EXISTING KITCHEN VENTILATION SYSTEM SEQUENCES AND SEQUENCES INTEGRAL TO EXISTING KITCHEN HOOD UNIT MOUNTED CONTROLS. SEQUENCES SHALL BE INTEGRAL TO THE UNIT MOUNTED CONTROLS PROVIDED WITH THE KITCHEN EXHAUST FAN AND MAKE-UP AIR UNIT.
B. THE DDC SYSTEM SHALL MONITOR THE MAKE-UP AIR AND EXHAUST FAN FOR STATUS (CURRENT SENSING RELAY) AND ALARMING. IF THE DEVICES GO INTO ALARM, IT SHALL SEND AN ALARM TO THE WORKSTATION. THE KITCHEN HOOD HAS CONTROLS EXISTING TO REMAIN.
C. REFER TO THE ATTACHED INPUT/OUTPUT SUMMARY SHEET FOR THE DDC SYSTEM POINT REQUIREMENTS.

POINT NAME	KITCHEN VENTILATION SYSTEM Hardware Points AI	AO	DI	DO	Software Points AV	DV	TREND	ALARM	SHOW ON GRAPHIC
KMAU SUPPLY AIR	X						X	X	X
KMAU SUPPLY FAN	X						X	X	X
EXHAUST FAN	X						X	X	X
KMAU GAS HEAT			X				X	X	X

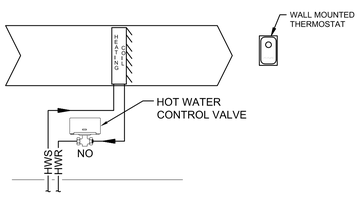


1 DDC CONTRACTOR PROVIDED HARDWARE AND POINT
2 CONNECT TO EXISTING POINT OF KITCHEN HOOD VENTILATION SYSTEM.

KITCHEN VENTILATION SYSTEM CONTROLS DIAGRAM

NOT TO SCALE

POINT NAME	HARDWARE POINTS AI	AO	DI	DO	SOFTWARE POINTS AV	DV	TREND	ALARMS NON-CRITICAL ALARM PRIORITY 5	NON-CRITICAL ALARM PRIORITY 4	RENO LESS CRITICAL ALARM PRIORITY 3	RENO CRITICAL ALARM PRIORITY 2	SHOW ON GRAPHIC
DUCT MOUNTED HEATING COIL				X								

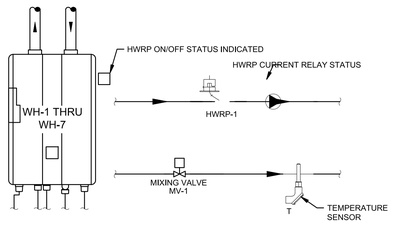


DUCT MOUNTED HEATING COIL

A. THE DUCT HEATING COIL IS CONTROLLED BY A WALL MOUNTED LINE VOLTAGE THERMOSTAT. THE DDC SHALL HAVE A RELAY TO DISABLE HEAT OPERATION.

HOT WATER DUCT HEATING COIL

NOT TO SCALE



POINT NAME	HARDWARE POINTS AI	AO	DI	DO	SOFTWARE POINTS AV	DV	TREND	ALARMS ALARM	SHOW ON GRAPHIC
DOMESTIC HOT WATER HEATER ENABLE/DISABLE (TYP OF 7)				X					X
DOMESTIC HOT WATER HEATER STATUS (TYP OF 7)			X					X	X
HOT WATER SUPPLY TEMPERATURE	X							X	X
HOT WATER SUPPLY TEMPERATURE SETPOINT					X				X
HOT WATER RETURN TEMPERATURE	X								X
CIRCULATING PUMP START/STOP				X					X
CIRCULATING PUMP STATUS			X					X	X

DOMESTIC HOT WATER SYSTEM

A. ON A CALL FOR DOMESTIC HOT WATER, THE DDC SYSTEM SHALL ENABLE THE DOMESTIC WATER HEATERS AND CASCADE THE HEATERS AS REQUIRED TO SATISFY THE DOMESTIC HOT WATER DEMAND.
B. ON A DROP IN HOT WATER SUPPLY TEMPERATURE BELOW THE SETPOINT, ADDITIONAL WATER HEATERS SHALL BE INDEXED ON. ON A RISE IN HOT WATER SUPPLY TEMPERATURE ABOVE THE SETPOINT, THE REVERSE SHALL OCCUR.
C. THE CIRCULATING PUMP SHALL ENABLE ON A TIME OF DAY SCHEDULE. ENABLE WHEN OCCUPIED.
D. THE DDC SHALL MONITOR THE STATUS OF THE DOMESTIC HOT WATER HEATERS AND THE DOMESTIC HOT WATER CIRCULATING PUMP.

DOMESTIC HOT WATER SYSTEM DETAIL

NOT TO SCALE

COMMONWEALTH OF VIRGINIA
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12/20/2024
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
AUTOMATIC TEMPERATURE CONTROLS

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO: 21-156
DESIGNED BY: CEP
DRAWN BY: JAR
CHECKED BY: KDA

M6.6

DATE: 12/20/2024

SEQUENCE OF OPERATION

SEQUENCE OF OPERATIONS

BOILER SYSTEM RUN CONDITIONS:

THE BOILER SYSTEM SHALL BE ENABLED TO RUN WHENEVER:
- A DEFINABLE NUMBER OF HOT WATER COILS NEED HEATING.
- AND OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).

TO PREVENT SHORT CYCLING, THE BOILER SYSTEM SHALL RUN FOR AND BE OFF FOR MINIMUM ADJUSTABLE TIMES (BOTH USER DEFINABLE), UNLESS SHUTDOWN ON SAFETIES OR OUTSIDE AIR CONDITIONS.

THE BOILER SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS.

THE BOILER SYSTEM SHALL ALSO RUN FOR FREEZE PROTECTION WHENEVER THE OUTSIDE AIR TEMPERATURE IS LESS THAN 38°F (ADJ.).

THE BOILER MANUFACTURER'S CONTROLS WILL CONTROL THE STAGING OF THE BOILERS BASED ON LOAD DEMAND. THE DDC WILL START HEATING WATER PUMPS AND ENABLE THE BOILERS THROUGH THE BOILER MANUFACTURER'S SEQUENCING PANEL, AND PROVIDE A SIGNAL TO THE MANUFACTURER'S CONTROL PANEL TO CONTROL THE HEATING WATER SUPPLY TEMPERATURE TO THE BUILDING (140° F SETPOINT). BOILERS WILL OPERATE IN SEQUENCE AND MAINTAIN LEAVING HEATING WATER TEMPERATURE THROUGH THEIR OWN CONTROLS BASED ON AN EXTERNAL HEATING WATER TEMPERATURE CONTROL SIGNAL FROM THE DDC SYSTEM. IF THE SYSTEM LOAD SHOULD BEGIN TO FALL BELOW THE LOAD CAPACITY OF THE BOILERS, THE BOILER MANUFACTURER'S SEQUENCING CONTROL PANEL WILL SEQUENCE OFF THE BOILERS SO THAT NO MORE BOILERS ARE IN OPERATION THAN IS REQUIRED TO MEET THE REDUCED LOAD. THE BOILER MANUFACTURER'S SEQUENCING CONTROLS PANEL WILL ALTERNATE LEAD AND LAG BOILERS ON A WEEKLY BASIS. THE DDC CONTROLS WILL ENABLE AND DISABLE THE BOILER SEQUENCING PANEL, MONITOR HEATING WATER SUPPLY AND RETURN TEMPERATURE, AND MONITOR BOILER ALARM STATUS. THE BOILER SEQUENCING PANEL WILL OPEN THE MOTORIZED ISOLATION VALVE PRIOR TO ENABLING ANY BOILER AND CLOSE THE VALVE AFTER ANY BOILER IS DISABLED.

BOILER 1 (B-1) SAFETIES:
THE FOLLOWING SAFETIES SHALL BE MONITORED:
- BOILER ALARM.
- LOW WATER LEVEL.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- BOILER ALARM.
- LOW WATER LEVEL ALARM.

BOILER 2 (B-2) SAFETIES:
THE FOLLOWING SAFETIES SHALL BE MONITORED:
- BOILER ALARM.
- LOW WATER LEVEL.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- BOILER ALARM.
- LOW WATER LEVEL ALARM.

HOT WATER PUMP LEAD/STANDBY OPERATION:
THE TWO HOT WATER PUMPS SHALL OPERATE IN A LEAD/STANDBY FASHION.
- THE LEAD PUMP SHALL RUN FIRST.
- ON FAILURE OF THE LEAD PUMP, THE STANDBY PUMP SHALL RUN AND THE LEAD PUMP SHALL TURN OFF.

THE DESIGNATED LEAD PUMP SHALL ROTATE UPON ONE OF THE FOLLOWING CONDITIONS (USER SELECTABLE):
- MANUALLY THROUGH A SOFTWARE SWITCH
- IF PUMP RUNTIME (ADJ.) IS EXCEEDED
- DAILY
- WEEKLY
- MONTHLY

ALARMS SHALL BE PROVIDED AS FOLLOWS:
HOT WATER PUMP 1 (P-3)
- FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

HOT WATER PUMP 2 (P-4)
- FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

CIRCULATION PUMP 1 (P-5):
THE CIRCULATION PUMP 1 SHALL RUN ANYTIME BOILER 1 IS CALLED TO RUN AND SHALL HAVE A USER DEFINABLE DELAY (ADJ.) ON STOP.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- CIRCULATION PUMP 1 FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- CIRCULATION PUMP 1 RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- CIRCULATION PUMP 1 RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER-DEFINABLE LIMIT.

CIRCULATION PUMP 2 (P-6):
THE CIRCULATION PUMP 2 SHALL RUN ANYTIME BOILER 2 IS CALLED TO RUN AND SHALL HAVE A USER DEFINABLE DELAY (ADJ.) ON STOP.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- CIRCULATION PUMP 2 FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- CIRCULATION PUMP 2 RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- CIRCULATION PUMP 2 RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER-DEFINABLE LIMIT.

BOILER CONTROL (B-1 AND B-2)

THE BOILER SYSTEM CONTROLS SHALL BE INTEGRATED TO THE BUILDING DDC SYSTEM THROUGH BACNET MS/TP INTERFACE FOR MONITORING. ALL CONTROL SHALL BE VIA HARDWIRED CONNECTIONS.

AFTER THE DDC HAS STARTED THE LEAD HEATING WATER PUMP, AS PREVIOUSLY DESCRIBED, THE DDC WILL ENABLE THE LEAD BOILER THROUGH THE BOILER MANUFACTURER'S SEQUENCING CONTROL PANEL. THE LEAD BOILER WILL START AND OPERATE TO MAINTAIN LEAVING WATER TEMPERATURE AT ITS SETPOINT THROUGH ITS OWN CONTROLS.

THE BOILER MANUFACTURER'S SEQUENCING CONTROL PANEL SHALL SELECT A DIFFERENT BOILER WEEKLY TO ACT AS THE MAIN, INDEXING THE OTHER BOILER AS LAG BOILER.

THE BOILER MANUFACTURER'S SEQUENCING CONTROL PANEL SHALL STAGE THE BOILERS TO MAXIMIZE TIME SPENT AT THE LOWEST FIRING RATE, MAXIMIZING EFFICIENCY.

BOILER LEAD/LAG OPERATION:
THE TWO BOILERS SHALL OPERATE IN A LEAD/LAG FASHION.
- THE LEAD BOILER SHALL RUN FIRST.
- ON FAILURE OF THE LEAD BOILER, THE LAG BOILER SHALL RUN AND THE LEAD BOILER SHALL TURN OFF.
- AS HOT WATER TEMPERATURE DROPS BELOW A SETPOINT OF 150 F (ADJ.), THE LAG BOILER SHALL STAGE ON AND RUN IN UNISON WITH THE LEAD BOILER TO MAINTAIN HOT WATER TEMPERATURE SETPOINT.
- AS HOT WATER TEMPERATURE RISES BACK TO 20°F ABOVE SETPOINT, THE LAG BOILER SHALL STAGE OFF.

THE DESIGNATED LEAD BOILER SHALL ROTATE UPON ONE OF THE FOLLOWING CONDITIONS: (USER SELECTABLE):
- MANUALLY THROUGH A SOFTWARE SWITCH
- IF BOILER RUNTIME (ADJ.) IS EXCEEDED
- DAILY
- WEEKLY
- MONTHLY

ALARMS SHALL BE PROVIDED AS FOLLOWS:
BOILER 1
- FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

BOILER 2
- FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

LEAD BOILER FAILURE: THE LEAD BOILER IS IN FAILURE AND THE LAG BOILER IS ON.

HOT WATER SUPPLY TEMPERATURE SETPOINT RESET:
THE HOT WATER SUPPLY TEMPERATURE SETPOINT SHALL RESET BASED ON OUTSIDE AIR TEMPERATURE.

AS OUTSIDE AIR TEMPERATURE RISES FROM 0°F (ADJ.) TO 60°F (ADJ.) THE HOT WATER SUPPLY TEMPERATURE SETPOINT SHALL RESET DOWNWARDS BY SUBTRACTING FROM 0°F (ADJ.) TO 30°F (ADJ.) FROM THE CURRENT BOILER SETPOINT.

PRIMARY HOT WATER TEMPERATURE MONITORING:
THE FOLLOWING TEMPERATURES SHALL BE MONITORED:
- PRIMARY HOT WATER SUPPLY.
- PRIMARY HOT WATER RETURN.

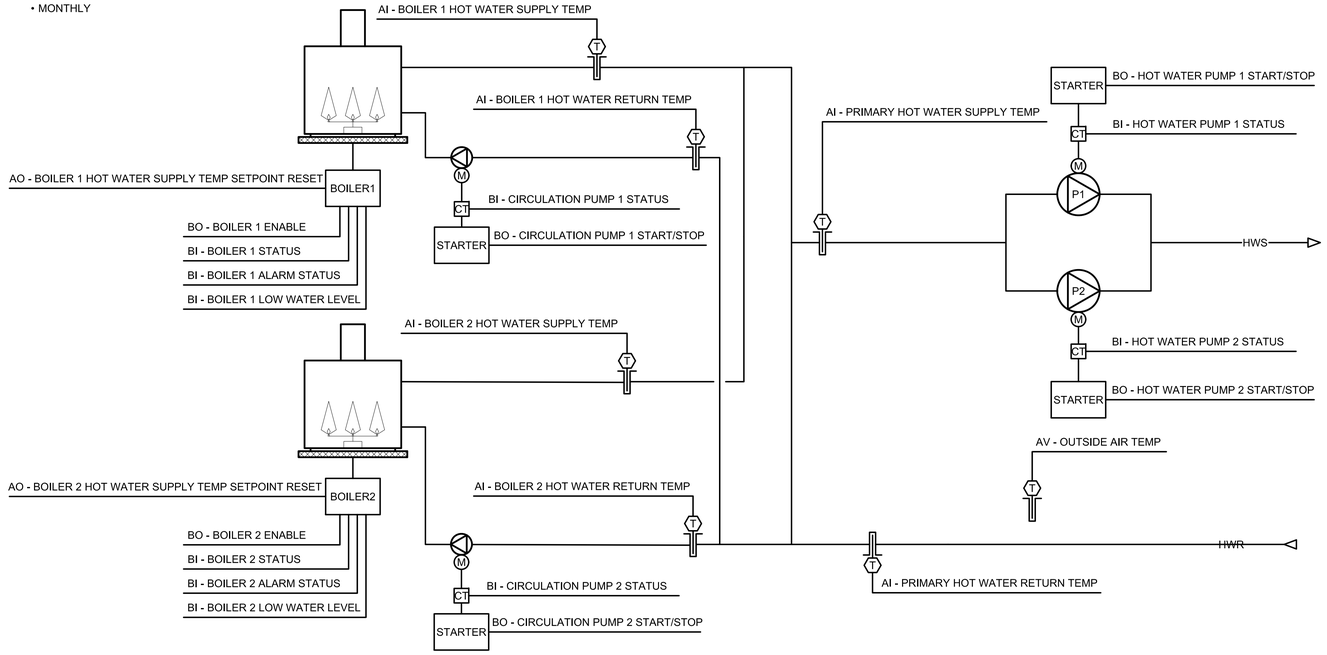
ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH PRIMARY HOT WATER SUPPLY TEMP: IF GREATER THAN 200°F (ADJ.).
- LOW PRIMARY HOT WATER SUPPLY TEMP: IF LESS THAN 100°F (ADJ.).

BOILER 1 HOT WATER TEMPERATURE MONITORING:
THE FOLLOWING TEMPERATURES SHALL BE MONITORED:
- BOILER 1 HOT WATER SUPPLY.
- BOILER 1 HOT WATER RETURN.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH HOT WATER SUPPLY TEMP: IF GREATER THAN 200°F (ADJ.).
- LOW HOT WATER SUPPLY TEMP: IF LESS THAN 100°F (ADJ.).

BOILER 2 HOT WATER TEMPERATURE MONITORING:
THE FOLLOWING TEMPERATURES SHALL BE MONITORED:
- BOILER 2 HOT WATER SUPPLY.
- BOILER 2 HOT WATER RETURN.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH HOT WATER SUPPLY TEMP: IF GREATER THAN 200°F (ADJ.).
- LOW HOT WATER SUPPLY TEMP: IF LESS THAN 100°F (ADJ.).



HOT WATER HEATING CONTROL DIAGRAM

POINTS LIST

	HARDWARE POINTS				SOFTWARE POINTS						
POINT NAME	AI	AO	DI	DO	AV	DV	LOOP	SCHED	TREND	ALARM	SHOW ON GRAPHIC
BOILER 1 HOT WATER RETURN TEMP	X								X		X
BOILER 1 HOT WATER SUPPLY TEMP	X								X		X
BOILER 2 HOT WATER RETURN TEMP	X								X		X
BOILER 2 HOT WATER SUPPLY TEMP	X								X		X
PRIMARY HOT WATER RETURN TEMP	X								X		X
PRIMARY HOT WATER SUPPLY TEMP	X								X		X
BOILER 1 HOT WATER SUPPLY TEMP SETPOINT RESET		X							X		X
BOILER 2 HOT WATER SUPPLY TEMP SETPOINT RESET		X							X		X
BOILER 1 ALARM STATUS			X						X	X	X
BOILER 1 LOW WATER LEVEL			X						X	X	X
BOILER 1 STATUS			X						X		X
BOILER 2 ALARM STATUS			X						X	X	X
BOILER 2 LOW WATER LEVEL			X						X	X	X
BOILER 2 STATUS			X								X
CIRCULATION PUMP 1 STATUS			X								X
CIRCULATION PUMP 2 STATUS			X								X
HOT WATER PUMP 1 STATUS			X								X
HOT WATER PUMP 2 STATUS			X								X
BOILER 1 ENABLE				X					X		X
BOILER 2 ENABLE				X							X
CIRCULATION PUMP 1 START/STOP				X					X		X
CIRCULATION PUMP 2 START/STOP				X					X		X
HOT WATER PUMP 1 START/STOP				X							X
HOT WATER PUMP 2 START/STOP				X							X
OUTSIDE AIR TEMP					X						X
BOILER 1 FAILURE										X	
BOILER 1 HIGH HOT WATER SUPPLY TEMP										X	
BOILER 1 LOW HOT WATER SUPPLY TEMP										X	
BOILER 1 RUNNING IN HAND										X	
BOILER 1 RUNTIME EXCEEDED										X	
BOILER 2 FAILURE										X	
BOILER 2 HIGH HOT WATER SUPPLY TEMP										X	
BOILER 2 LOW HOT WATER SUPPLY TEMP										X	
BOILER 2 RUNNING IN HAND										X	
BOILER 2 RUNTIME EXCEEDED										X	
CIRCULATION PUMP 1 FAILURE										X	
CIRCULATION PUMP 1 RUNNING IN HAND										X	
CIRCULATION PUMP 1 RUNTIME EXCEEDED										X	
CIRCULATION PUMP 2 FAILURE										X	
CIRCULATION PUMP 2 RUNNING IN HAND										X	
CIRCULATION PUMP 2 RUNTIME EXCEEDED										X	
HIGH PRIMARY HOT WATER SUPPLY TEMP										X	
HOT WATER PUMP 1 FAILURE										X	
HOT WATER PUMP 1 RUNNING IN HAND										X	
HOT WATER PUMP 1 RUNTIME EXCEEDED										X	
HOT WATER PUMP 2 FAILURE										X	
HOT WATER PUMP 2 RUNNING IN HAND										X	
HOT WATER PUMP 2 RUNTIME EXCEEDED										X	
LEAD BOILER FAILURE										X	X
LOW PRIMARY HOT WATER SUPPLY TEMP										X	
TOTALS	6	2	10	6	1	0	0	0	20	29	25

TOTAL HARDWARE (24) — TOTAL SOFTWARE (50)

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M6.7

DATE: 12/20/2024

HOT WATER FAN COIL UNIT SEQUENCE OF OPERATIONS:

A. THE DDC CONTROLLER SHALL ENABLE AND DISABLE THE FAN COIL UNIT, CONTROL AND MONITOR ALL POINTS OF CONTROL DESCRIBED HEREIN TO ACHIEVE THE FOLLOWING SEQUENCE OF OPERATION.

B. SUPPLY FAN CONTROL: ANYTIME THE DDC SYSTEM DETERMINES THAT THE SUPPLY AIR FAN SHOULD RUN, THE SYSTEM SHALL START THE FAN. THE FAN SHALL RUN CONTINUOUSLY WHEN OCCUPIED. WHEN THE SUPPLY FAN STATUS INDICATES THA THE FAN HAS STARTED, THE APPROPRIATE CONTROL MODE SHALL BE ENABLED.

C. OCCUPIED MODE: WHEN THE BUILDING IS INDEXED FOR OCCUPIED OPERATION, AND IF THE UNIT IS NOT RUNNING ON WARM-UP, COOL-DOWN, OR OVERRIDE, THE DDC SHALL OPEN THE OUTDOOR AIR DAMPER AND ENABLE THE SUPPLY FAN. THE UNIT'S OUTSIDE AIR DAMPER SHALL BE OPENED TO THE "OCCUPIED" POSITION. DAMPER POSITIONS SHALL BE DETERMINED BY THE TAB CONTRACTOR.

D. TEMPERATURE CONTROL: ON A FALL IN SPACE TEMPERATURE BELOW SETPOINTS, THE DDC SHALL MODULATE THE HOT WATER PREHEAT COIL CONTROL VALVE OPEN. ON A CONTINUED FALL IN TEMPERATURE, THE DDC SHALL MODULATE THE HOT WATER PREHEAT CONTROL VALVE OPEN. ON A RISE IN SPACE TEMPERATURE, THE DDC SHALL MODULATE THE CONTROL VALVE CLOSED. ON A FURTHER RISE IN THE SPACE TEMPERATURE ABOVE SETPOINT (ADJ.), THE DDC SHALL MODULATE THE CHILLED WATER CONTROL VALVE FULLY OPEN. ON A FALL IN SPACE TEMPERATURE, THE REVERSE SHALL OCCUR.

E. UNOCCUPIED MODE: WHEN THE BUILDING IS INDEXED FOR UNOCCUPIED OPERATION, THE DDC SHALL DISABLE THE SUPPLY FAN, CLOSE THE CHILLED WATER AND HOT WATER CONTROL VALVES, CLOSE THE OUTSIDE AIR DAMPER, AND OPEN THE RETURN AIR DAMPER.

F. NIGHT SET-BACK: WHEN THE SPACE TEMPERATURE FALLS BELOW 60°F (ADJ.), THE DDC SHALL ENABLE THE SUPPLY FAN AND MODULATE THE HOT WATER HEATING COIL CONTROL VALVE OPEN. WHEN THE SPACE TEMPERATURE RISES TO 65°F (ADJ.), THE DDC SHALL MODULATE THE HOT WATER CONTROL VALVE CLOSED AND DISABLE THE SUPPLY FAN.

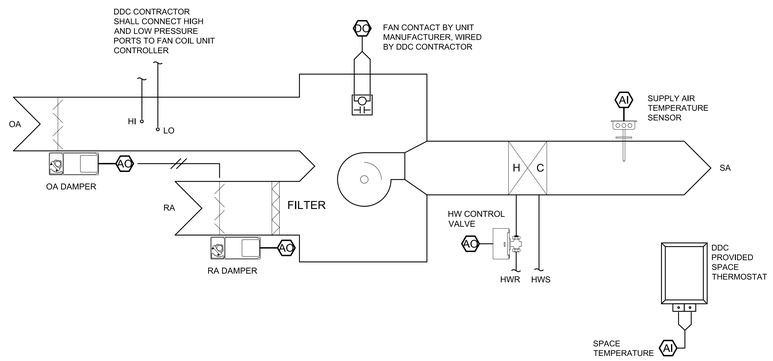
G. NIGHT SET-UP: WHEN THE SPACE TEMPERATURE RISES TO 85°F (ADJ.) OR ABOVE, THE DDC SHALL ENABLE THE SUPPLY FAN AND MODULATE OPEN THE CHILLED WATER CONTROL VALVE TO MAINTAIN SUPPLY COOLING SET POINT. WHEN THE SPACE TEMPERATURE FALLS TO 80°F (ADJ.), THE DDC SHALL DISABLE THE SUPPLY FAN AND CLOSE THE CHILLED WATER CONTROL VALVE.

H. WARM-UP: WHEN THE OPTIMAL START PROGRAM CALLS FOR WARM-UP OPERATION, THE DDC SHALL ENABLE THE SUPPLY FAN AND MODULATE THE HOT WATER CONTROL VALVE TO MAINTAIN SUPPLY HEATING SETPOINT. THE UNIT SHALL OPERATE WITH 100% RETURN AIR UNTIL SETPOINT IS REACHED.

I. COOL-DOWN: WHEN THE OPTIMAL START PROGRAM CALLS FOR COOL-DOWN OPERATION, THE DDC SHALL ENABLE THE SUPPLY FAN AND MODULATE OPEN THE CHILLED WATER VALVE TO MAINTAIN COOLING SETPOINT. THE UNIT SHALL OPERATE WITH 100% RETURN AIR UNTIL SETPOINT IS REACHED.

POINT NAME	Hardware Points				Software Points		Trend	Alarm	Show on Graphic	DEFAULT VALUE
	AI	AO	DI	DO	AV	DV				
SPACE TEMPERATURE	X						X	X	X	
SPACE SETPOINT	X						X		X	
DISCHARGE AIR TEMPERATURE	X						X	X	X	
FAN			X				X	X	X	
HOT WATER VALVE				X			X	X	X	
OUTSIDE AIR DAMPER		X					X		X	
RETURN AIR DAMPER		X					X			
OCCUPANCY						X				
OCCUPIED COOLING SETPOINT					X					74°F
OCCUPIED HEATING SETPOINT					X					71°F
UNOCCUPIED COOLING SETPOINT					X					85°F
UNOCCUPIED HEATING SETPOINT					X					60°F

NOTE: THE GRAPHICS SHALL INCLUDE THE SETPOINT DISPLAY FOR EACH CONTROLLED OR MONITORED VARIABLE.



FAN COIL UNIT CONTROL DIAGRAM

NOT TO SCALE

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ABBREVIATIONS

AHU	AIR HANDLING UNIT MARK	GPM	GALLONS PER MINUTE	MV-1	MIXING VALVE MARK
B-1	BOILER MARK	HP	HORSEPOWER	NO.	NUMBER
CF/HR	CUBIC FEET PER HOUR	HW	HOT WATER	NT-1	CONDENSATE NEUTRALIZATION TANK MARK
CD	CONDENSATE DRAIN	HWR	HOT WATER RECIRCULATING	PH	PHASE
CW	COLD WATER	HWRP-1	HOT WATER RECIRCULATING PUMP MARK	RPM	REVOLUTIONS PER MINUTE
ERU	ENERGY RECOVER UNIT MARK	HZ	HERTZ	SHT	SHEET
ET-1	THERMAL EXPANSION TANK MARK	KW	KILOWATT	TYP	TYPICAL
EXIST	EXISTING	MAX	MAXIMUM	V	VENT OR VOLTS
G	GAS	MECH	MECHANICAL	WH-1	WATER HEATER MARK
GAL	GALLONS	MIN	MINIMUM	WC	WATER COLUMN
GPH	GALLONS PER HOUR				

LEGEND

- CD — CONDENSATE DRAIN PIPING
- EXISTING COLD WATER PIPING
- CW — COLD WATER PIPING
- G — EXISTING GAS PIPING
- G — GAS PIPING
- EXISTING HOT WATER PIPING
- HW — HOT WATER PIPING
- EXISTING HOT WATER RECIRCULATING PIPING
- HWR — HOT WATER RECIRCULATING PIPING
- 140HW — HOT WATER PIPING (140° HW)
- THREADED UNION
- PIPE CAP
- PIPE UP
- PIPE DOWN
- PIPE TEE DOWN
- PIPE TEE UP
- DIRECTION OF FLOW IN PIPE

- BV — BALANCING VALVE
- BALL VALVE
- CHECK VALVE
- EXISTING GAS SHUT-OFF VALVE
- GAS SHUT-OFF VALVE
- EXISTING GATE VALVE
- PRESSURE RELIEF VALVE
- DRAIN VALVE
- DIAL FACE THERMOMETER
- VRV — VACUUM RELIEF VALVE
- GAS PRESSURE REGULATOR

- EXISTING TO REMAIN
- EXISTING TO BE REMOVED
- NEW WORK
- D1 — DEMOLITION NOTE
- 1 — NEW WORK NOTE
- REMOVE EXISTING TO THIS POINT
- POINT OF CONNECTION FOR NEW WORK
- 1 / P2.01 — ENLARGED PLAN NUMBER / SHEET NUMBER WHERE ENLARGED PLAN IS SHOWN

GENERAL NOTES

1. FOR PIPE SIZES NOT SHOWN, SEE DIAGRAMS.
2. EXERCISE DUE CAUTION INSTALLING RUNOUTS AND BRANCH PIPING FROM MAINS TO ALLOW FOR EXPANSION MOVEMENT.
3. ARRANGE PIPING TO CLEAR DUCTWORK, CONDUITS, LIGHT FIXTURES, ETC., AND ALLOW FOR PIPE HANGERS AND ACCESS TO VALVES.
4. ALL HOT WATER AND HOT WATER RECIRCULATION PIPING SHALL HAVE A MINIMUM OF ONE-INCH THICK INSULATION.
5. COORDINATE ALL PLUMBING CONNECTIONS TO EQUIPMENT WITH SUPPLIER AND OTHER TRADES PRIOR TO INSTALLATION OF PIPING.

GENERAL DEMOLITION NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING AT HIS SOLE EXPENSE, ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION.
2. CONTRACTOR SHALL REPORT IMMEDIATELY TO THE ENGINEER ALL FIELD CONDITIONS ENCOUNTERED WHICH ARE NOT SHOWN ON THE DRAWINGS AND WHICH WERE NOT REASONABLY ANTICIPATED.

CONDENSING TANKLESS GAS WATER HEATER SCHEDULE

UNIT NUMBER	MANUFACTURER	MODEL NUMBER	ROOM	GAS INPUT				WATER FLOW RATE		VENT MANIFOLD		RECIRCULATING PUMP							REMARKS
				MINIMUM (BTU/H)	MAXIMUM (BTU/H)	CONTROLS VOLTS	CONTROLS PH	AT 70° RISE (GPM)	AT 100° RISE (GPM)	SIZE	TERMINATES	NO.	B&G MODEL	FLOW (GPM)	HEAD (FT)	ELECTRIC HP	ELECTRIC V	ELECTRIC PH	
WH-1	NAVIEN	NPE240-A2	MECH B18	13,300	199,000	120	1	5.6	3.9	8"	(6)	(4)	PL-30	9	17	1/12	120	1	(1)(2)(3)(5)(7)
WH-2	NAVIEN	NPE240-A2	MECH B18	13,300	199,000	120	1	5.6	3.9	8"	(6)	(4)	PL-30	9	17	1/12	120	1	(1)(2)(3)(5)(7)
WH-3	NAVIEN	NPE240-A2	MECH B18	13,300	199,000	120	1	5.6	3.9	8"	(6)	(4)	PL-30	9	17	1/12	120	1	(1)(2)(3)(5)(7)
WH-4	NAVIEN	NPE240-A2	MECH B18	13,300	199,000	120	1	5.6	3.9	8"	(6)	(4)	PL-30	9	17	1/12	120	1	(1)(2)(3)(5)(7)
WH-5	NAVIEN	NPE240-A2	MECH B18	13,300	199,000	120	1	5.6	3.9	8"	(6)	(4)	PL-30	9	17	1/12	120	1	(1)(2)(3)(5)(7)
WH-6	NAVIEN	NPE240-A2	MECH B18	13,300	199,000	120	1	5.6	3.9	8"	(6)	(4)	PL-30	9	17	1/12	120	1	(1)(2)(3)(5)(7)
WH-7	NAVIEN	NPE240-A2	MECH B18	13,300	199,000	120	1	5.6	3.9	8"	(6)	(4)	PL-30	9	17	1/12	120	1	(1)(2)(3)(5)(7)

NOTES:

(1) INSTALL COMPLETE PER MANUFACTURER'S INSTRUCTIONS.

(2) EACH WATER HEATER REQUIRES 120V, 60HZ POWER SOURCE IN A PROPERLY GROUNDED CIRCUIT.

(3) PROVIDE (1) THERMAL EXPANSION TANK (ET-1) WHERE INDICATED: AMTROL MODEL # ST-5C, TANK VOLUME = 2.0 GALLONS.

(4) PROVIDE (1) HOT WATER RECIRULATING PUMP (HWRP-1) AS SCHEDULED TO SERVE WH-1 THRU WH-7.

(5) PROVIDE: (1) GFFM-KD1ZUS-005 READY LINK BASE COMPONENT
(3) GFFM-KD1ZUS-006 READY LINK ADD-ON COMPONENT
(1) GXXX001325 NEUTRALIZATION TANK
(7) 30014367A COMMON VENT COLLAR KIT
(2) 30019042A 4 UNIT BACK TO BACK MANIFOLDS

(6) TERMINATE 8" INTAKE PIPE AT NEW PLENUM BOX . PLENUM BOX BY MECHANICAL CONTRACTOR.

(7) PROVIDE (1) MIXING VALVE (MV-1) : LEONARD MODEL # TM-520-DT TO SERVE WH-1 THRU WH-7

EXISTING GAS DEMAND

USE	CF/HR
KITCHEN EQUIPMENT	
MAKE-UP AIR UNIT	171
MECHANICAL (HEATING)	
(2) BOILERS @ 1500 CF/HR EACH	3000
TOTAL EXISTING DEMAND	3171

NEW GAS DEMAND

USE	CF/HR
DOMESTIC WATER (HEATING)	
(7) GAS-FIRED WATER HEATERS @ 199.9 CF/HR EACH	1399.3
KITCHEN EQUIPMENT	
EXISTING MAKE-UP AIR UNIT	171
MECHANICAL (HEATING)	
BOILER #1 (B-1)	2500
BOILER #2 (B-2)	2500
TOTAL EXISTING AND NEW DEMAND	6570.3

NOTE: CONTRACTOR SHALL VERIFY AND COORDINATE WITH VA NATURAL GAS THE SIZE OF EXISTING GAS METER WITH RESPECT TO THE NEW GAS DEMAND INDICATED AND REPLACE METER IF REQUIRED.

NOTE: EXISTING CONDITIONS ILLUSTRATED HAVE BEEN DETERMINED FROM ORIGINAL CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL INVESTIGATE FIELD CONDITIONS PRIOR TO COMMENCEMENT OF WORK, COORDINATE AND MAKE ADJUSTMENTS AS NECESSARY.

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
GENERAL NOTES, LEGEND AND ABBREVIATIONS

REVISIONS

MARK	DESCRIPTION	DATE

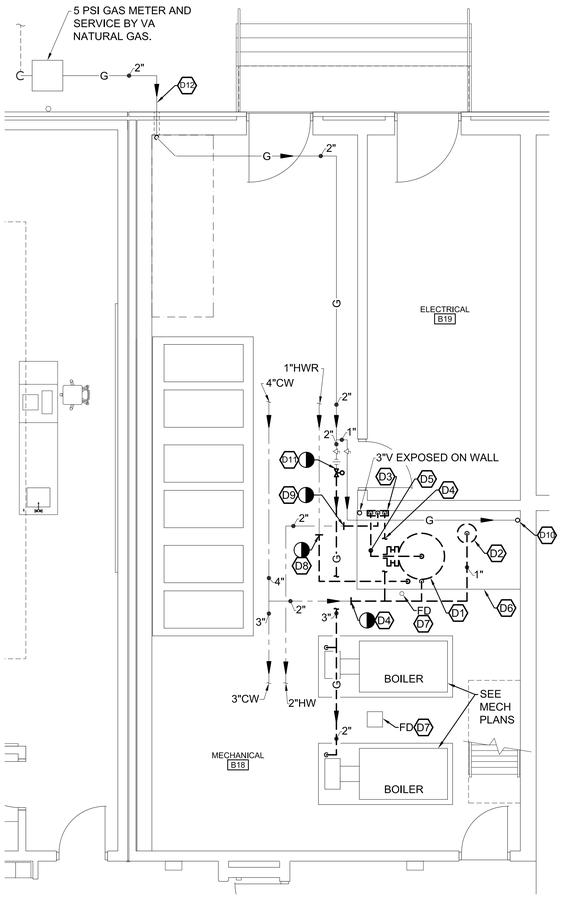
COMM. NO: 21-156
DESIGNED BY: MDS
DRAWN BY: DJB
CHECKED BY: KDA

P0.1

DATE: 12/20/2024

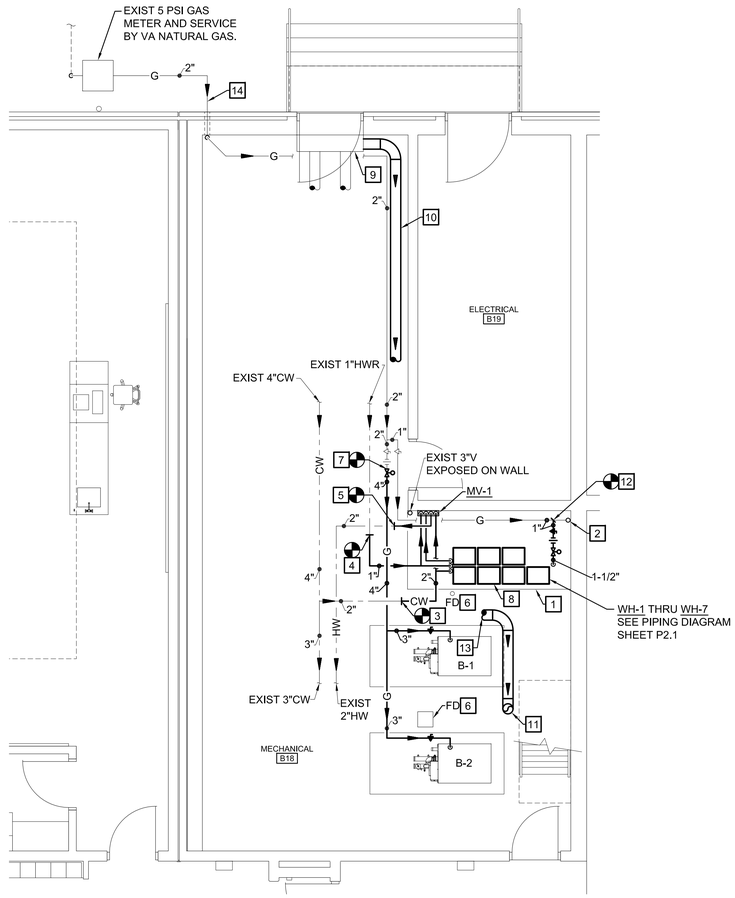
DEMOLITION NOTES ⬡	
NO.	DESCRIPTION
D1	REMOVE WATER HEATER AND TANK HEATER COMPLETE.
D2	REMOVE EXPANSION TANK.
D3	REMOVE MIXING VALVE COMPLETE.
D4	REMOVE COLD WATER PIPING TO LIMITS INDICATED.
D5	REMOVE 140 DEGREE HOT WATER PIPING FROM STORAGE TANK TO MIXING VALVE AS INDICATED.
D6	CONCRETE PAD TO REMAIN.
D7	FLOOR DRAIN TO REMAIN.
D8	REMOVE HOT WATER RECIRCULATING PUMP AND PIPING TO LIMITS INDICATED.
D9	REMOVE HOT WATER PIPING FROM MIXING VALVE TO LIMITS INDICATED.
D10	1" GAS PIPING UP TO ROOF TO REMAIN.
D11	REMOVE GAS PRESSURE REGULATOR AND ALL ASSOCIATED GAS PIPING TO BOILERS.
D12	GAS PIPING TO REMAIN.

NEW WORK NOTES □	
NO.	DESCRIPTION
1	EXISTING CONCRETE PAD.
2	EXISTING 1" GAS UP TO ROOF.
3	CONNECT TO EXISTING COLD WATER PIPING.
4	CONNECT TO EXISTING HOT WATER RECIRCULATING.
5	CONNECT TO EXISTING HOT WATER PIPING.
6	EXISTING FLOOR DRAIN.
7	PROVIDE NEW GAS PRESSURE REGULATOR. CONNECT TO EXISTING 2" GAS PIPING. REGULATOR SHALL BE SIZED TO HANDLE 5000 CF/HR @ 5 PSI TO 12" WATER COLUMN.
8	WATER HEATER TYPICAL OF SEVEN. SEE DIAGRAM SHEET P2.1.
9	NEW PLENUM BOX AND 8" PVC BOILER INTAKE PIPING. SEE MECHANICAL SHEET M4.1.
10	PROVIDE NEW 8" SCHEDULE 40 PVC INTAKE PIPE, ACCESSORIES AND SUPPORTS COMPLETE. CONNECT TO NEW PLENUM BOX.
11	TURN EXHAUST PIPE FROM WATER HEATERS UP TO MECHANICAL MEZZANINE. CONTINUE EXHAUST PIPING TO EXHAUST VENT THRU ROOF.
12	CONNECT TO EXISTING GAS PIPING.
13	8" SCHEDULE 40 PVC EXHAUST PIPE FROM WATER HEATER.
14	EXISTING GAS PIPING.
15	8" FLUE THRU ROOF, TERMINATE WITH GOOSENECK. CONTRACTOR TO PROVIDE FLASHING AT ROOF PENETRATION.



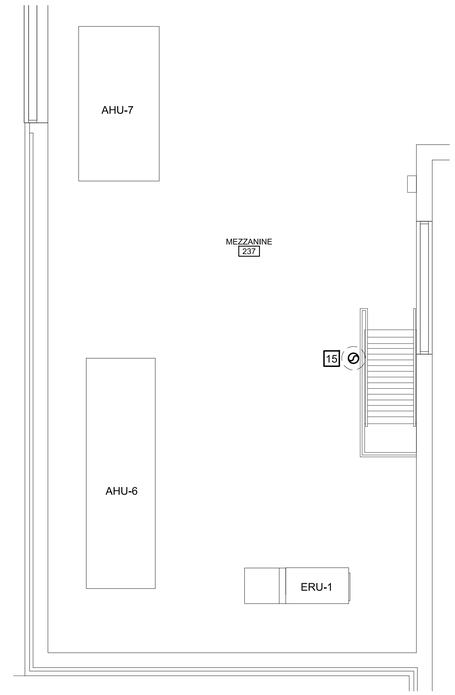
MECHANICAL ROOM FLOOR PLAN - PLUMBING - DEMOLITION

SCALE: 1/4" = 1'-0"



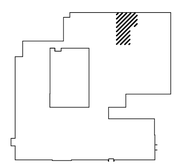
MECHANICAL ROOM FLOOR PLAN - PLUMBING - NEW WORK

SCALE: 1/4" = 1'-0"



SECOND FLOOR PLAN - MECHANICAL MEZZANINE - NEW WORK

SCALE: 1/4" = 1'-0"



KEY PLAN

NOT TO SCALE

TRUE NORTH

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MECHANICAL ROOM FLOOR PLANS - PLUMBING

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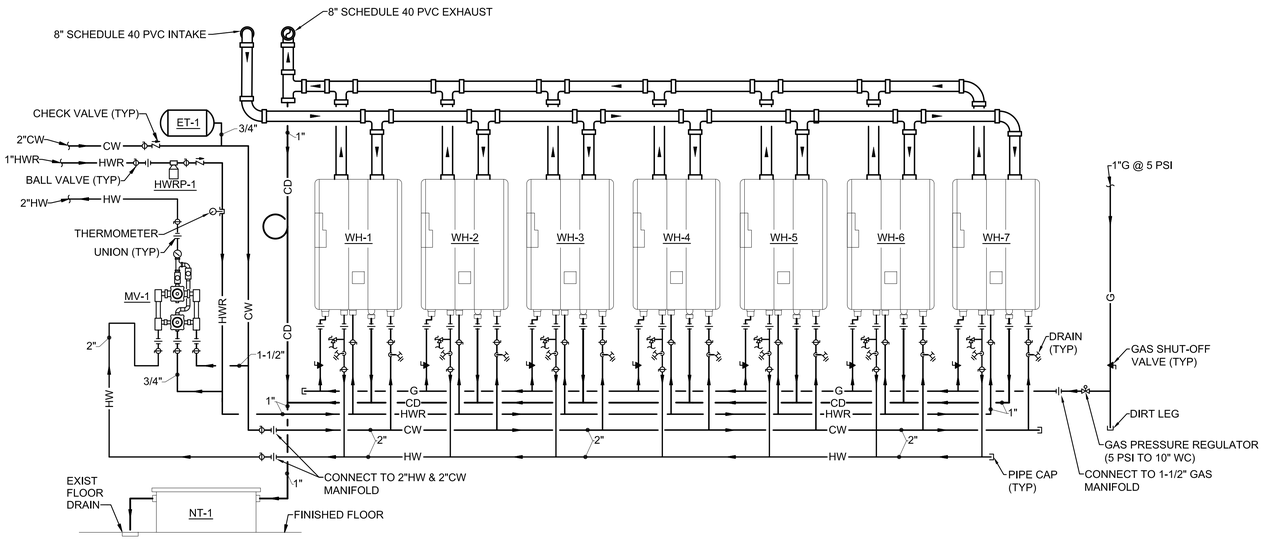
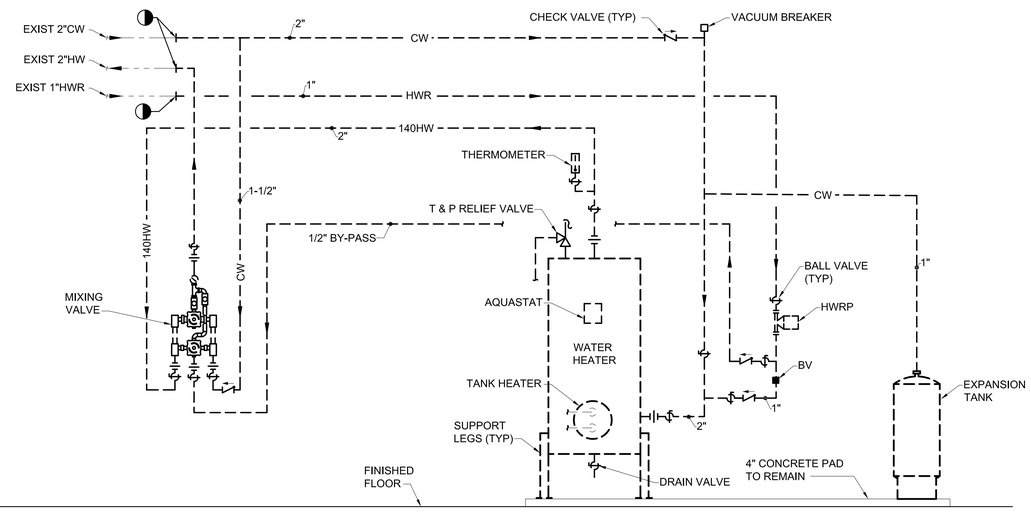


COMMON VENT INSTALLATION NOTE :

THE CONTRACTOR SHALL REFER TO THE "COMMON VENT INSTALLATION MANUAL" FOR THE NPE240-A2 CONDENSING WATER HEATER. THE MANUAL IS A SUPPLEMENT TO THE APPLIANCE MANUAL. ADDITIONAL INFORMATION CAN BE OBTAINED FROM THE NAVIAN WATER HEATER MANUAL. THE WATER HEATERS SHALL BE VENTED IN ACCORDANCE WITH THE "VENTING OF EQUIPMENT" SECTION OF THE LATEST ADDITION OF THE ANSI Z223.1/NFPA 54 FUEL GAS CODE, AND THE LATEST ADDITION OF THE INTERNATIONAL BUILDING CODE. THE COMPLETED INSTALLATION SHALL BE STARTED BY A REPRESENTATIVE OF THE MANUFACTURER, AFTER ALL REQUIREMENTS FOR THE CONDENSING WATER HEATERS AND THE CATEGORY IV COMMON VENT SYSTEM REQUIREMENTS HAVE BEEN MET. PROVIDE THE OWNER WITH INSTRUCTION FOR OPERATION AND MAINTENANCE REQUIREMENTS.

TANKLESS GAS WATER HEATER PIPING DIAGRAM - NEW WORK

NO SCALE



DOMESTIC HOT WATER STORAGE HEATER PIPING DIAGRAM - DEMOLITION

NO SCALE

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HVAC REPLACEMENT
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PLUMBING DETAILS

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ELECTRICAL LEGEND

LIGHTING:

- EXISTING 2' X 4' LIGHT FIXTURE.
- EXISTING 1' X 4' LIGHT FIXTURE.
- EXISTING 2' X 4' LIGHT FIXTURE CONNECTED TO EMERGENCY CIRCUIT.
- EXISTING 1' X 4' LIGHT FIXTURE CONNECTED TO EMERGENCY CIRCUIT.
- EXISTING DOWNLIGHT FIXTURE.
- EXISTING DOWNLIGHT FIXTURE CONNECTED TO EMERGENCY CIRCUIT.
- EXISTING PENDANT MOUNTED LIGHT FIXTURE CONNECTED TO EMERGENCY CIRCUIT.
- EXISTING EXIT LIGHT FIXTURE.
- EXISTING OCCUPANCY MOTION SENSOR.
- 106 — ROOM NUMBER INDICATOR.
- 1 — NEW WORK NOTE INDICATOR.
- 1 — DEMOLITION NOTE INDICATOR.

POWER:

- P — EXISTING CEILING MOUNTED PROJECTOR.
- PP — EXISTING POWER POLE.
- T — EXISTING DRY TYPE TRANSFORMER.
- E — ELECTRICAL CONNECTION TO EQUIPMENT.
- EF — ELECTRICAL CONNECTION TO EXHAUST FAN VIA MOTOR RATED MOTOR SWITCH AND SOLID STATE SPEED CONTROLLER.
- T — NEW LINE VOLTAGE THERMOSTAT. FURNISHED BY MECHANICAL CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR. SEE MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.
- J — JUNCTION BOX, SIZE AS REQUIRED.
- PANELBOARD, 480Y/277 VOLT.
- PANELBOARD, 208Y/120 VOLT.
- WP,GFI — TAMPER PROOF, DUPLEX RECEPTACLE, 20A, 120V. "GFI" WHEN USED INDICATES TAMPER PROOF GROUND FAULT CIRCUIT INTERRUPTER. "WP" WHEN USED INDICATES TAMPER PROOF WEATHER RESISTANT RECEPTACLE WITH METAL WEATHERPROOF WHILE IN USE ENCLOSURE.
- C — EXISTING CEILING MOUNTED DUPLEX RECEPTACLE.
- CONDUIT RUN CONCEALED ABOVE CEILING.
- H1A-15 — HOMERUNS TO PANEL. PANEL & CIRCUIT DESIGNATIONS AS INDICATED.
- BRANCH CIRCUIT OR FEEDER WIRING IN CONDUIT. NO TICK MARKS INDICATES 2 #12 CONDUCTORS & 1 #12 GND IN 1/2" CONDUIT U.O.N. TICK MARKS, WHEN SHOWN, INDICATE NUMBER OF CONDUCTORS IF OTHER THAN THREE: ( ) INDICATES GROUNDING CONDUCTOR. SEE NOTES ON DRAWINGS FOR CONDUCTOR SIZES LARGER THAN #12.
- 3P, 60 / 40, 3R — DISCONNECT SWITCH, 600V, U.O.N.: 3P = NUMBER OF POLES, 60 = SWITCH RATING, 40 = FUSE RATING. 3R = NEMA 3R ENCLOSURE.
- B — EXISTING EMERGENCY BOILER AND WATER HEATER STOP STATION.
- VFD — VARIABLE FREQUENCY DRIVE.
- SM — MOTOR RATED SNAP SWITCH, SINGLE POLE, 20A, 120V.
- SM2,30 — MOTOR RATED SNAP SWITCH, TWO POLE, 30A, 600V.
- SM2,40 — MOTOR RATED SNAP SWITCH, TWO POLE, 40A, 600V.
- 1 / E1.1 — PLAN CALLOUT INDICATOR.

FIRE ALARM SYSTEMS:

- FACP — EXISTING FIRE ALARM CONTROL PANEL.
- SEC — EXISTING SECURITY PANEL.
- RFAA — EXISTING REMOTE FIRE ALARM ANNUNCIATOR.
- S — EXISTING FIRE ALARM SYSTEM SMOKE DETECTOR.
- D — EXISTING FIRE ALARM SYSTEM DUCT SMOKE DETECTOR WITH SAMPLING TUBES.
- D — PROVIDE NEW FIRE ALARM SYSTEM DUCT SMOKE DETECTOR WITH SAMPLING TUBES, PART NUMBERS "FCD-350" AND "FAA-325-5". PROVIDE CONDUCTORS AND CONNECT TO MECHANICAL EQUIPMENT FOR UNIT SHUT-DOWN. COORDINATE REQUIREMENTS WITH BAS SUB-CONTRACTOR.
- L — PROVIDE NEW DUCT SMOKE DETECTOR REMOTE INDICATING LIGHT / TEST SWITCH, PART NUMBER D305. INSTALL FLUSH IN NEW CEILING BELOW THE RAHU. PROVIDE BAKELITE NAMEPLATE FOR SWITCH WITH EQUIPMENT DESIGNATION. PROVIDE CONDUCTORS BETWEEN SWITCH AND DUCT SMOKE DETECTOR AS DIRECTED BY THE FIRE ALARM SYSTEM MANUFACTURER.
- CM — PROVIDE NEW CEILING MOUNTED CARBON MONOXIDE DETECTOR WITH POPIT, BOSCH SYSTEM SENSOR CO1224-T AND BOSCH POPIT D9127U. CONNECT TO EXISTING BOSCH FIRE ALARM CONTROL PANEL. PROVIDE ALL REQUIRED MODULES AND ACCESSORIES IN THE EXISTING BOSCH FIRE ALARM CONTROL PANEL TO CONNECT THE NEW CARBON MONOXIDE DETECTORS.

TELECOMMUNICATIONS SYSTEMS:

- IDF MDF — EXISTING IDF / MDF DATA RACK.
- S — EXISTING INTERCOM SYSTEM SPEAKER.
- C — EXISTING CEILING MOUNTED DATA OUTLET.
- WA — EXISTING WIRELESS ACCESS POINT DEVICE.
- SB — EXISTING SMART BOARD.
- TBB — EXISTING TELEPHONE BACKBOARD.

SECURITY SYSTEMS:

- C — EXISTING CEILING MOUNTED CCTV CAMERA.
- MD — EXISTING CEILING MOUNTED MOTION DETECTOR.

ABBREVIATIONS

A	AMP
AHU	AIR HANDLING UNIT
B	BOILER
C	CHILLER
CCTV	CLOSED CIRCUIT TELEVISION
CIRC. OR CKT.	CIRCUIT
CUH	CABINET UNIT HEATER
EF	EXHAUST FAN
FACP	FIRE ALARM CONTROL PANEL
FCU	FAN COIL UNIT
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
IDF	INTERMEDIATE DISTRIBUTION FRAME
KAIC	KILO-AMPERE INTERRUPTING CAPACITY
MCB	MAIN CIRCUIT BREAKER
MDF	MAIN DISTRIBUTION FRAME
MLO	MAIN LUGS ONLY
MDS	MAIN DISTRIBUTION SWITCHBOARD
MTD.	MOUNTED
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NO.	NUMBER
NNPS	NEWPORT NEWS PUBLIC SHCOOLS
P	POLE OR PUMP
RAHU	ROOFTOP AIR HANDLING UNIT
SEC	SECURITY
SPD	SURGE PROTECTION DEVICE
TBB	TELEPHONE BACKBOARD
UH	UNIT HEATER
UL	UNDERWRITER'S LABORATORIES
U.O.N.	UNLESS OTHERWISE NOTED
V	VOLT
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE
WH	WATER HEATER
WP	WEATHERPROOF
XFMR	TRANSFORMER
Y	WYE

THE CONTRACTOR SHALL INCLUDE IN THE BASE BID PRICING THE COST ALLOWANCE AS NOTED IN THE IFB FOR THE PERFORMANCE OF A SHORT CIRCUIT, COORDINATION STUDY, AND ARC FLASH HAZARD ANALYSIS BY THE SEAM GROUP. THE CONTRACTOR SHALL CONTRACT WITH THE "SEAM GROUP" FOR THE PERFORMANCE OF THE STUDY AND ANALYSIS WITHIN THE COST OF THEIR CONTRACT WITH NNPS. SEAM GROUP CONTACT INFORMATION IS JSANDERS@SEAMGROUP.COM, (765-418-7112).
THE SHORT CIRCUIT, COORDINATION STUDY, AND ARC FLASH HAZARD ANALYSIS SHALL BE PROVIDED FOR ALL NEW POWER DISTRIBUTION EQUIPMENT, ALL HVAC EQUIPMENT, AND ALL EXISTING POWER DISTRIBUTION EQUIPMENT AFFECTED BY THE SCOPE OF THIS CONTRACT. THE ARC FLASH EQUIPMENT LABELS SHALL BE FURNISHED BY THE SEAM GROUP, INSTALLED ON THE EQUIPMENT BY THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE SEAM GROUP AND PROVIDE THE REQUIRED DATA (POWER EQUIPMENT SHOP DRAWINGS, FEEDERS INFORMATION [TYPE, LENGTH, AND SIZES], INFORMATION FOR POWER COMPANY TRANSFORMER, ETC.) TO THE SEAM GROUP TO PERFORM THE STUDY AND ARC FLASH ANALYSIS. THE CONTRACTOR SHALL SUBMIT THE STUDY AND ANALYSIS ALONG WITH THE SHOP DRAWINGS TO THE ENGINEER FOR REVIEW. THE CONTRACTOR SHALL SUBMIT A HARD COPY AND ELECTRONIC COPY OF THE FINAL STUDY PRODUCED BY SEAM GROUP TO THE OWNER.

GENERAL FIRE ALARM NOTES:

1. ALL NEW, REMOVAL AND REINSTALLATION OF EXISTING FIRE ALARM WORK (WIRING DEVICES AND CONNECTING DEVICES) SHALL BE PERFORMED BY CERTIFIED BOSCH / RADIONICS INSTALLER. DOCUMENTATION OF CERTIFICATION BY COMPANY AND INSTALLER SHALL BE PROVIDED.
2. NNPS TECHNOLOGY STAFF WILL PROVIDE ADDRESSING AND VERBAL GUIDANCE ON THE ALARM CONNECTIVITY. IF QUESTIONS COME UP DURING THE PROJECT CONTACT NNPS TECHNOLOGY.
3. NNPS TECHNOLOGY STAFF WILL PROVIDE THE FIRE ALARM PANEL PROGRAMMING.
4. PRIOR TO THE PROJECT STARTING GENERAL CONTRACTOR FOREMAN AND ASSISTANT FOREMAN NAMES AND TELEPHONE NUMBERS SHOULD BE PROVIDED TO NNPS TECHNOLOGY SO THAT ALARM CODES CAN BE CREATED AND THE ABILITY OF PLACING THE ALARM SYSTEMS ON TEST
5. PRIOR TO ANY DISTURBANCE OF THE ALARM SYSTEMS THE SYSTEM(S) SHOULD BE PLACED ON TEST WITH OUR ALARM MONITORING CENTER
6. NO T-TAPPING SHALL BE USED ON THE FIRE ALARM SYSTEM
7. IF ANY MODIFICATIONS OR DEVICE REMOVAL/REINSTALLATIONS ARE NEEDED A CITY PERMIT MUST BE PULLED FOR THE FIRE ALARM SYSTEM.
8. PROVIDE FIRE ALARM DEVICES, CABLING AND ACCESSORIES THAT ARE COMPATIBLE WITH THE EXISTING RADIONICS FIRE ALARM PANEL. ALL NEW FIRE ALARM CABLING SHALL BE RED IN COLOR AND PLENUM RATED. PROVIDE PLENUM RATED TIE WRAPS TO SUPPORT CABLES ABOVE CEILING. ALL FIRE ALARM CABINETS SHALL BE RED.
9. NO TAPE SHALL BE USED TO PROTECT FIRE ALARM DEVICES. PLASTIC COVERS ARE THE ONLY AUTHORIZED MEANS OF PROTECTION.

GENERAL DEMOLITION NOTES:

1. DISCONNECT AND REMOVE ALL ELECTRICAL MATERIAL, EQUIPMENT AND ELECTRICAL CONNECTIONS TO HVAC UNITS SHOWN ON ELECTRICAL DEMOLITION DRAWINGS, U.O.N.
2. PROVIDE ALL ELECTRICAL DEMOLITION WORK NECESSARY TO INSTALL NEW WORK. CONTRACTOR SHALL REROUTE AND RECONNECT ANY CIRCUIT THAT WILL REMAIN IN USE BUT INTERFERES WITH NEW CONSTRUCTION.
3. MAINTAIN CONTINUITY OF ALL EXISTING CIRCUITS TO REMAIN OR PORTIONS THEREOF AFFECTED BY NEW WORK.
4. EXISTING CONDITIONS ILLUSTRATED HAVE BEEN DETERMINED FROM ORIGINAL CONSTRUCTION DOCUMENTS AND LIMITED NON-INVASIVE FIELD INVESTIGATION. THE CONTRACTOR SHALL INVESTIGATE FIELD CONDITIONS PRIOR TO COMMENCEMENT OF WORK, COORDINATE AND MAKE ADJUSTMENTS AS NECESSARY.
5. ANY POWER OUTAGE THAT WILL AFFECT THE MAIN DISTRIBUTION PANEL (MDP) AND POWER TO THE WHOLE BUILDING SHALL BE COORDINATED IN ADVANCE WITH NNPS PLANT SERVICES/ELECTRIC SHOP WITH A 48 HOUR NOTICE.
6. BEFORE BEGINNING ANY WORK, FIELD VERIFY THE WORKING CONDITION OF ALL AUXILIARY SYSTEM EQUIPMENT/DEVICES (WIRELESS ACCESS POINTS, PROJECTORS, SMOKE DETECTORS, MOTION DETECTORS, FIRE ALARM NOTIFICATION DEVICES, PHONES, PRINTERS, COMPUTERS, MONITORS, KEYBOARDS, ETC.) SCHEDULED FOR REMOVAL. NOTIFY THE OWNER OF ANY DEFECTIVE EQUIPMENT. AFTER REINSTALLATION OF AUXILIARY SYSTEMS EQUIPMENT/DEVICES SAVED DURING DEMOLITION IS COMPLETE, RE-VERIFY THE WORKING CONDITION OF EACH. REPLACE ALL EQUIPMENT/DEVICES FOUND DEFECTIVE AFTER REINSTALLATION WHICH WAS WORKING PRIOR TO REMOVAL WITH NEW EQUIPMENT/DEVICES TO MATCH EXISTING AT NO ADDITIONAL COST TO THE OWNER. CONTRACTOR SHALL REQUEST A WALK THROUGH WITH NNPS TECHNOLOGY STAFF TO ENSURE A FULL WORKING SYSTEM PRIOR TO REMOVAL.
7. DURING REMOVAL OF THE EXISTING LAY-IN CEILING PANELS, SUPPORT ALL EXISTING AUXILIARY SYSTEMS CABLES (DATA, TELEPHONE, CCTV, FIRE ALARM, MOTION DETECTORS, CATV, ETC.) ORIGINATING FROM MDF OR IDF EQUIPMENT FROM EXISTING STRUCTURE ABOVE EXISTING CEILING. ADJUST ROUTING OF THESE CABLE TO ACCOMMODATE THE INSTALLATION OF NEW HVAC SYSTEM EQUIPMENT AND DUCTWORK. RE-VERIFY THE WORKING CONDITION OF THESE CABLES AND REPLACE ALL CABLES FOUND DEFECTIVE AFTER REINSTALLATION, WHICH WERE WORKING PRIOR TO REMOVAL WITH CABLES TO MATCH EXISTING AT NO ADDITIONAL COST TO OWNER.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR MOVING, REROUTING OR SECURING ALL AUXILIARY SYSTEMS CABLES DURING CONSTRUCTION IF ANY CEILINGS ARE TO BE REMOVED. IF ANY WIRING HAS TO BE DISCONNECTED TO BE REROUTED, THE CONTRACTOR SHALL COORDINATE WITH NNPS.
9. PRIOR TO THE START OF CONSTRUCTION, THE ELECTRICAL SUB-CONTRACTOR SHALL VERIFY THE OPERATION OF ALL OCCUPANCY SENSORS SHOWN TO BE REMOVED AND REINSTALLED. NOTIFY THE ENGINEER IF ANY OCCUPANCY SENSORS ARE NOT IN PROPER WORKING CONDITION.
10. ALL AUXILIARY DEVICES SHALL BE BAGGED AND SUSPENDED ABOVE CEILING PRIOR TO CEILING REMOVAL ANY DEVICES NOT EFFECTED BY CONSTRUCTION SHALL BE PROTECTED FROM DUST AND DEBRIS.

GENERAL NEW WORK NOTES:

1. WHERE INDIVIDUAL 120V HOMERUN CIRCUITS ARE SHOWN ON THE DRAWINGS, THEY MAY BE COMBINED AS FOLLOWS:
   - NO MORE THAN THREE (3) PHASE CONDUCTORS PLUS THREE NEUTRALS AND ONE (1) GROUND PER CONDUIT, EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE.
   - NO TWO OF THE SAME PHASE CONDUCTOR PER CONDUIT.
   - PROVIDE 120V CIRCUIT WITH INDIVIDUAL NEUTRALS PER CIRCUIT. NEUTRALS MAY NOT BE SHARED BETWEEN PHASES.
2. COORDINATE WITH MECHANICAL DRAWINGS FOR EXACT LOCATION OF EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS INCLUDING EXACT POINT OF ELECTRICAL CONNECTION. MAKE ADJUSTMENTS TO NEW AND EXISTING CONDUIT ROUTING, PLACEMENT OF DISCONNECTS AND STARTERS AS REQUIRED.
3. PROVIDE NEW TYPED PANEL INDEXES FOR ALL PANELS WHERE CHANGES BROUGHT ON BY THIS PROJECT OCCUR.
4. IN AREAS WHERE NO OTHER TRADES ARE INVOLVED, THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF EXISTING CEILING TILES AS REQUIRED TO INSTALL NEW CIRCUITRY. REINSTALL EXISTING CEILING TILES AFTER COMPLETION OF WORK. REPLACE ALL CEILING TILES DAMAGED DURING THIS PROJECT WITH NEW TILES TO MATCH EXISTING TO THE SATISFACTION OF THE ARCHITECT AND OWNER.
5. EXERCISE CARE IN REMOVING MATERIAL AND EQUIPMENT DURING DEMOLITION. REPAIR ALL DAMAGE TO EXISTING SURFACES OR EXISTING EQUIPMENT TO REMAIN TO THE SATISFACTION OF THE ARCHITECT AND OWNER AT NO COST TO THE OWNER.
6. ALL MATERIAL REMOVED DURING DEMOLITION (AND NOT CALLED OUT TO BE REINSTALLED) SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE JOB SITE, UNLESS OTHERWISE NOTED. THE OWNER RESERVES THE RIGHT TO SALVAGE ANY OR ALL EXISTING MATERIAL AND/OR EQUIPMENT NOT SCHEDULED TO BE REINSTALLED.
7. VERIFY ALL CIRCUITS SAVED DURING DEMOLITION AS TO WIRE SIZE AND POINT OF ORIGIN.
8. WHERE THE TERM "BRANCH CIRCUITRY" IS USED ON THESE DRAWINGS, IT IS TO BE CONSTRUED TO MEAN CONDUIT AND CONDUCTORS.
9. INSTALL DEVICES SHOWN ON DRAWINGS IN ACCORDANCE WITH MOUNTING HEIGHTS SHOWN IN THE ELECTRICAL LEGEND AND/OR THE PROJECT SPECIFICATIONS.
10. SEAL AROUND ALL EXISTING AND NEW CONDUIT PENETRATIONS THROUGH WALLS WITH FIRE RETARDANT SEALANT THAT MEETS OR EXCEEDS THE FIRE RATING OF THE WALL. ALL OTHER THRU WALL PENETRATIONS SHALL BE GROUTED OR SEALED WITH CAULK. ALL PENETRATIONS SHALL BE CORE DRILLED OR DRILLED WITH PROPER TOOLS. HAMMERS SHALL NOT BE USED TO CREATE PENETRATIONS IN WALLS. REPAIRS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
11. ALL NEW AUXILIARY SYSTEMS (FIRE ALARM, INTERCOM, DATA, AND ACCESS CONTROL) CABLING INSTALLED ABOVE CEILING WITHOUT CONDUIT SHALL BE PLENUM RATED.
12. SPLICES, KINKS, TWISTS AND DEFECTS OF ANY NATURE WILL NOT BE ACCEPTED BY NNPS TECHNOLOGY STAFF AND THE CONTRACTOR MUST, AT ITS OWN EXPENSE, REPLACE ALL SECTION OF CABLE IDENTIFIED BY NNPS.
13. NNPS TECHNOLOGY STAFF SHOULD BE CONSULTED BY CONTRACTOR FOR CHANGES THAT WILL BE MADE AND FOR GUIDANCE.
14. HARD AND ELECTRONIC COPIES OF AS-BUILT DRAWINGS SHALL BE PROVIDED TO NNPS TECHNOLOGY STAFF THAT SHOWS CABLE PATH, ZONE NUMBER FOR ANY NEW DEVICES,LOCATION OF DEVICES, ETC.
15. PROVIDE BUSHINGS ON ALL CONDUITS AND RACEWAYS.
16. ALL AUXILIARY SYSTEMS CABLES INSTALLED ABOVE CEILINGS SHALL BE INSTALLED IN EXISTING PATHWAYS WHERE AVAILABLE. PROVIDE J-HOOKS 12" ON CENTER IN AREAS WHERE EXISTING PATHWAYS ARE NOT AVAILABLE. SECURING CABLE TO CONDUIT IS NOT PERMITTED.
17. ANY MODIFICATION TO THE INTERCOM SYSTEM SHALL BE PERFORMED BY A CERTIFIED BOGEN REPRESENTATIVE.

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THOMPSON
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22 ENTERPRISE PARKWAY HAMPTON, VA 23666
TELEPHONE: (757) 599-6415 PROJECT NUMBER: 21-156

HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA

ELECTRICAL LEGEND, ABBREVIATIONS, NOTES

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO:	21-156
DESIGNED BY:	CAB
DRAWN BY:	CAB
CHECKED BY:	KC

E0.1

DATE: 12/20/2024

PARTIAL FIRST FLOOR PLAN - AREA 'A' - LIGHTING & AUXILIARY SYSTEMS - DEMOLITION & NEW WORK ⟨2⟩⟨3⟩⟨4⟩⟨5⟩⟨6⟩⟨7⟩ 1 2 3 4

SCALE: 1/8" = 1'-0"

DEMOLITION NOTES: (THIS DRAWING ONLY)

⟨1⟩ EXISTING TO REMAIN.

⟨2⟩ DISCONNECT AND REMOVE ALL CEILING MOUNTED EXIT LIGHTS, LIGHT FIXTURES, MOTION DETECTORS, PROJECTORS, PROJECTOR RECEPTACLES, PROJECTOR DATA OUTLETS, SPEAKERS, WIRELESS ACCESS DEVICES AND WALL MOUNTED OCCUPANCY SENSORS SHOWN ON THIS DRAWING, U.O.N., AND SAVE FOR REUSE. LABEL EACH EQUIPMENT/DEVICE WITH REGARDS TO ROOM NUMBERS AND LOCATIONS TO ENSURE EACH EQUIPMENT/DEVICE IS INSTALLED IN THE SAME LOCATION FROM WHICH THEY WERE REMOVED. SAVE ASSOCIATED BRANCH CIRCUITRY FOR REUSE. RELOCATE AND EXTEND EXISTING BRANCH CIRCUITRY AS REQUIRED TO ACCOMMODATE THE REMOVAL AND INSTALLATION OF NEW MECHANICAL EQUIPMENT AND DUCTWORK. COORDINATE MECHANICAL WORK WITH THE MECHANICAL CONTRACTOR. COORDINATE FIRE ALARM AND SECURITY WORK WITH THE OWNER.

⟨3⟩ TEMPORARILY SUPPORT AND BAG ALL CEILING MOUNTED SMOKE DETECTORS SHOWN ON THIS DRAWING FROM EXISTING ROOF STRUCTURE TO ACCOMMODATE THE REMOVAL OF EXISTING CEILING AND THE INSTALLATION OF THE NEW CEILING.

⟨4⟩ DISCONNECT AND REMOVE ALL CEILING MOUNTED CCTV CAMERAS SHOWN ON THIS DRAWING. AND SAVE FOR REUSE. SAVE ASSOCIATED CABLES FOR REUSE. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING:

- LABEL AND DOCUMENT EACH CCTV CAMERA LOCATION.
- ORIENTATION OF THE CAMERA NOTATED.
- T-GRID HANGER BRACKET AND BOX WITH THE SCREWS SHALL BE KEPT AND BE REUSED AT TIME OF REINSTALLATION.
- CAMERAS SHOULD BE INSTALLED IN THE SAME AREA AND IN THE SAME ORIENTATION AS ORIGINAL.
- CAMERA REINSTALLATION SHOULD TAKE INTO ACCOUNT ANY NEW OBSTRUCTIONS THAT IMPACT THE LOCATION AND/OR THE VIEWABLE AREA OF THE CAMERA SUCH AS LIGHTS AND EXIT SIGNS.
- IF CAMERA LENS NEEDS TO BE ADJUSTED, THE CONTRACTOR SHALL WORK WITH NNPS TECHNOLOGY STAFF TO REALIGN. THE CONTRACTOR SHALL CONTACT NNPS TECHNOLOGY STAFF FOR PICTURES OF CAMERA ORIENTATION.

⟨5⟩ DISCONNECT, REMOVE AND SAVE FOR REINSTALLATION THE FOLLOWING EQUIPMENT/DEVICES IN ALL SPACES WHERE CEILINGS ARE REMOVED/REINSTALLED AND WITH HVAC SYSTEM DEMOLITION/NEW WORK:

- ALL COMPUTERS INCLUDING ASSOCIATED MONITORS, TOWERS, POWER CORDS AND DATA PATCH CABLES.
- ALL WALL AND DESK MOUNTED TELEPHONE INSTRUMENTS, INCLUDING PATCH CABLES.
- ALL PRINTERS INCLUDING ASSOCIATED POWER CORDS AND DATA PATCH CABLES.
- ALL WIRELESS ACCESS POINTS DEVICES.
- ALL CEILING MOUNTED OR CART MOUNTED PROJECTORS INCLUDING ASSOCIATED MOUNTING PLATES, CEILING MOUNTED RECEPTACLES, CEILING MOUNTED DATA OUTLETS, POWER CORDS AND DATA PATCH CABLES.
- ALL WALL MOUNTED SMARTBOARDS, MDF AND IDF DATA RACKS SHALL REMAIN IN PLACE, COVERED AND PROTECTED THROUGHOUT CONSTRUCTION.

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⟨6⟩ REFER TO CP DRAWINGS FOR CEILINGS BEING REMOVED AND SYSTEMS AFFECTED.

⟨7⟩ ALL EXISTING PROJECTOR OUTLETS LOCATED ABOVE CEILING SHALL BE RELOCATED TO BELOW CEILING OR INSTALLED FLUSH WITH CEILING TILE. SPACES CONTAINING SMARTBOARDS MAY NOT REQUIRE THESE RECEPTACLES. VERIFY WITH OWNER PRIOR TO REINSTALLATION.

NEW WORK NOTES: (THIS DRAWING ONLY)

1 REINSTALL ALL WALL MOUNTED OCCUPANCY SENSORS, CEILING MOUNTED EXIT LIGHTS, LIGHT FIXTURES, MOTION DETECTORS, PROJECTORS, PROJECTOR RECEPTACLES, SPEAKERS AND WIRELESS ACCESS DEVICES SAVED DURING DEMOLITION ON NEW CEILING AND RECONNECT TO EXISTING BRANCH CIRCUITRY SAVED DURING DEMOLITION. EXTEND EXISTING BRANCH CIRCUITRY AS REQUIRED. PROVIDE NEW ANNEALED, LIGHT ZINC-COATED FINISH, 12-GAUGE WIRE FROM ALL FOUR CORNERS TIED TO BUILDING STRUCTURAL MEMBERS FOR ALL RECESSED LIGHT FIXTURES. SECURING SAFETY WIRES BY BRIDGING IS NOT ACCEPTABLE. THE SUPPORTING WIRES SHALL BE DISTINGUISHABLE BY COLOR OR TAGGING. PROVIDE ROD HANGERS CAPABLE OF SUPPORTING TWICE THE WEIGHT OF THE FIXTURES SUPPORTED BY THE ROD HANGER FOR ALL SURFACE MOUNTED LIGHT FIXTURES. ROD HANGERS SHALL BE A MINIMUM ,18" DIAMETER. COORDINATE NEW LIGHT FIXTURE SUPPORTS WITH NEW DUCTWORK AND PIPING AND ADJUST AS DIRECTED BY THE MECHANICAL CONTRACTOR.

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- IF CAMERA LENS NEEDS TO BE ADJUSTED, THE CONTRACTOR SHALL WORK WITH NNPS TECHNOLOGY STAFF TO REALIGN.

3 REINSTALL THE FOLLOWING EQUIPMENT/DEVICES SAVED DURING DEMOLITION AND CONNECT TO EXISTING POWER AND AUXILIARY SYSTEM CABLING:

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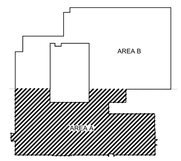
4 REINSTALL ALL EXISTING CEILING MOUNTED SMOKE DETECTORS SAVED DURING DEMOLITION IN NEW CEILING. COORDINATE EXACT LOCATIONS WITH OWNER.

5 PROVIDE NEW CARBON MONOXIDE DETECTOR. INSTALL ON NEW CEILING.



KEY PLAN
NOT TO SCALE

TRUE NORTH

KENZIE CAMBAR
Lic. No.049752
12/20/2024

THOMPSON
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BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA

PARTIAL FIRST FLOOR PLAN - AREA 'A' - LIGHTING & AUXILIARY SYSTEMS - DEMOLITION & NEW WORK

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5. DISCONNECT AND REMOVE ALL EXISTING POWER POLES SHOWN ON THIS DRAWING. SAVE ASSOCIATED BRANCH CIRCUITRY BACK FOR REUSE.

6. REFER TO CP DRAWINGS FOR CEILINGS BEING REMOVED AND SYSTEMS AFFECTED.

7. ALL EXISTING PROJECTOR OUTLETS LOCATED ABOVE CEILING SHALL BE RELOCATED TO BELOW CEILING OR INSTALLED FLUSH WITH CEILING TILE. SPACES CONTAINING SMARTBOARDS MAY NOT REQUIRE THESE RECEPTACLES. VERIFY WITH OWNER PRIOR TO REINSTALLATION.

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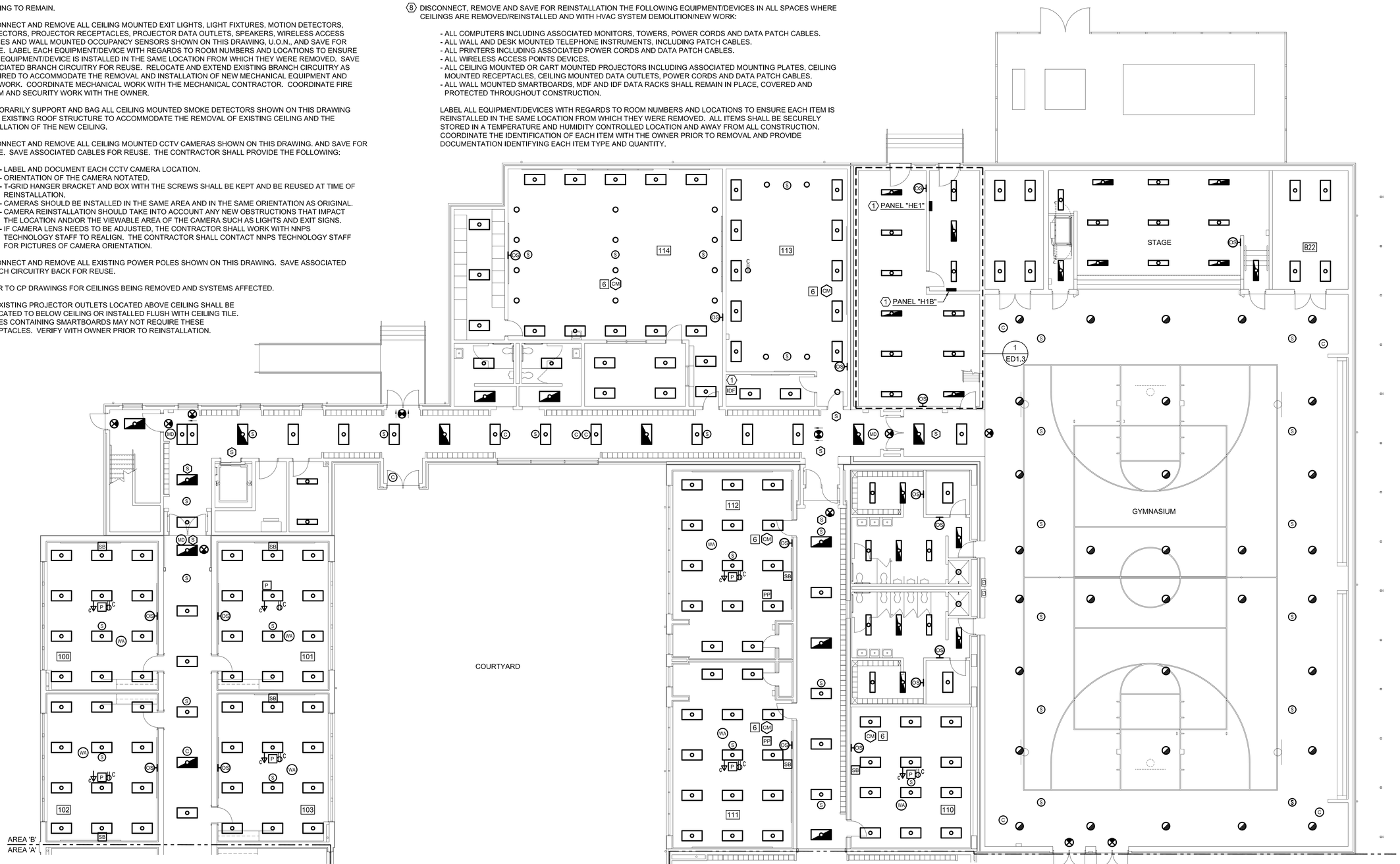

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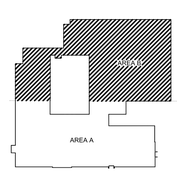

KEY PLAN
NOT TO SCALE

TRUE NORTH

PARTIAL FIRST FLOOR PLAN - AREA 'B' - LIGHTING & AUXILIARY SYSTEMS - DEMOLITION & NEW WORK ②③④⑤⑥⑦⑧ 1 2 3 4 5

SCALE: 1/8" = 1'-0"

COMMONWEALTH OF VIRGINIA
KENZIE CAMBAR
Lic. No.049752
12/20/2024
PROFESSIONAL ENGINEER

THOMPSON
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TELEPHONE: (757) 599-6415 PROJECT NUMBER: 21-156

HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
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PARTIAL FIRST FLOOR PLAN - AREA 'B' - LIGHTING & AUXILIARY SYSTEMS - DEMOLITION & NEW WORK

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO:	21-156
DESIGNED BY:	CAB
DRAWN BY:	CAB
CHECKED BY:	KC

ED1.2

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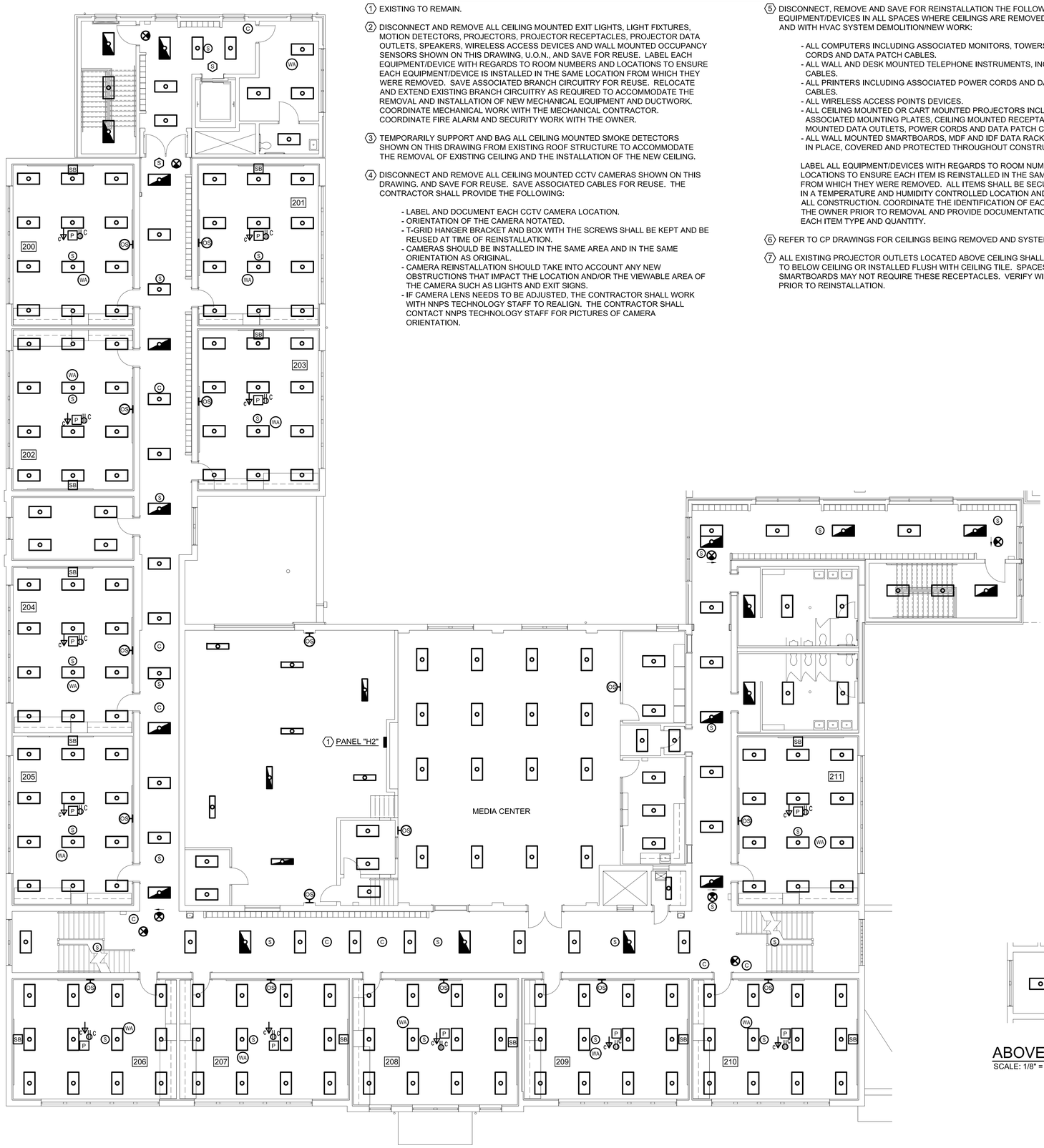
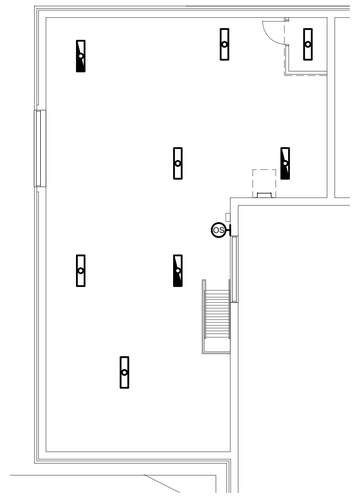
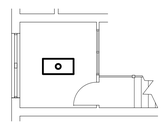


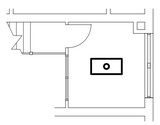
SECOND FLOOR PLAN - LIGHTING & AUXILIARY SYSTEMS - DEMOLITION & NEW WORK ②③④⑤⑥⑦ 1234
SCALE: 1/8" = 1'-0"



MEZZANINE PLAN - LIGHTING
SCALE: 1/8" = 1'-0"
1 ED1.2



ABOVE STAIRS #1
SCALE: 1/8" = 1'-0"



ABOVE STAIRS #2
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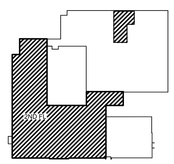

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Consulting Engineers
22 ENTERPRISE PARKWAY HAMPTON, VA 23666
TELEPHONE: (757) 599-6415 PROJECT NUMBER: 21-156

HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
SECOND FLOOR PLAN - LIGHTING & AUXILIARY SYSTEMS - DEMOLITION & NEW WORK

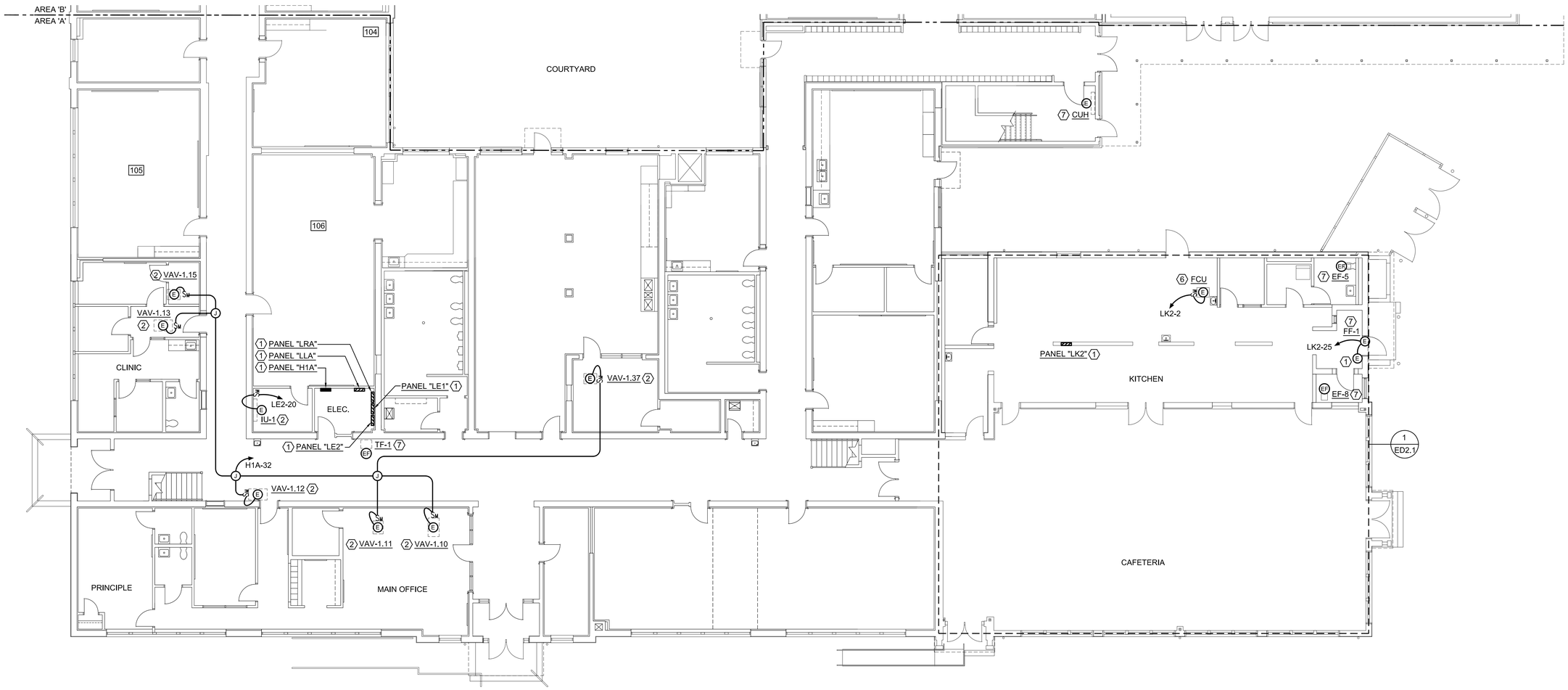
REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO:	21-156
DESIGNED BY:	CAB
DRAWN BY:	CAB
CHECKED BY:	KC

ED1.3

DATE: 12/20/2024

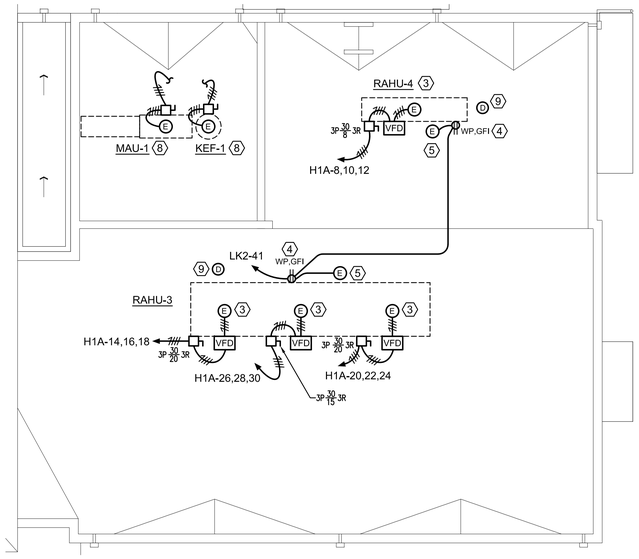


PARTIAL FIRST FLOOR PLAN - AREA 'A' - HVAC POWER - DEMOLITION

SCALE: 1/8" = 1'-0"

DEMOLITION NOTES: (THIS DRAWING ONLY)

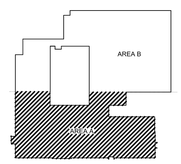
1. EXISTING TO REMAIN.
2. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. REMOVE DISCONNECT SWITCH. REMOVE BRANCH CIRCUITRY BACK TO PANELBOARD.
3. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. REMOVE VFD. REMOVE DISCONNECT SWITCH AND SAVE FOR REUSE. REMOVE BRANCH CIRCUITRY TO BELOW ROOF AND SAVE REMAINING BRANCH CIRCUITRY FOR REUSE.
4. DISCONNECT EXISTING RECEPTACLE. REMOVE HOMERUN BRANCH CIRCUITRY BACK TO PANELBOARD.
5. DISCONNECT ELECTRICAL CONNECTION TO HEAT TAPE. REMOVE BRANCH CIRCUITRY BACK TO EXISTING RECEPTACLE.
6. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. REMOVE DISCONNECT SWITCH. SAVE HOMERUN BRANCH CIRCUITRY FOR REUSE.
7. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. SAVE BRANCH CIRCUITRY FOR REUSE.
8. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. REMOVE DISCONNECT SWITCH. REMOVE BRANCH CIRCUITRY TO BELOW ROOF AND SAVE REMAINING BRANCH CIRCUITRY TO KITCHEN HOOD CONTROL PANEL FOR REUSE.
9. REMOVE FIRE ALARM DUCT SMOKE DETECTOR, DETECTOR BOX AND SAMPLING TUBES. SAVE FIRE ALARM CONDUCTORS FOR REUSE.



PARTIAL ROOF PLAN - AREA 'A' - HVAC POWER - DEMOLITION

SCALE: 1/8" = 1'-0"

1 ED2.1



KEY PLAN

NOT TO SCALE

TRUE NORTH

KENZIE CAMBAR
Lic. No.049752
12/20/2024

THOMPSON
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22 ENTERPRISE PARKWAY HAMPTON, VA 23666
TELEPHONE: (757) 599-6433 PROJECT NUMBER: 21-156

HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
PARTIAL FIRST FLOOR PLAN - AREA 'A' - HVAC POWER - DEMOLITION

REVISIONS

MARK	DESCRIPTION	DATE

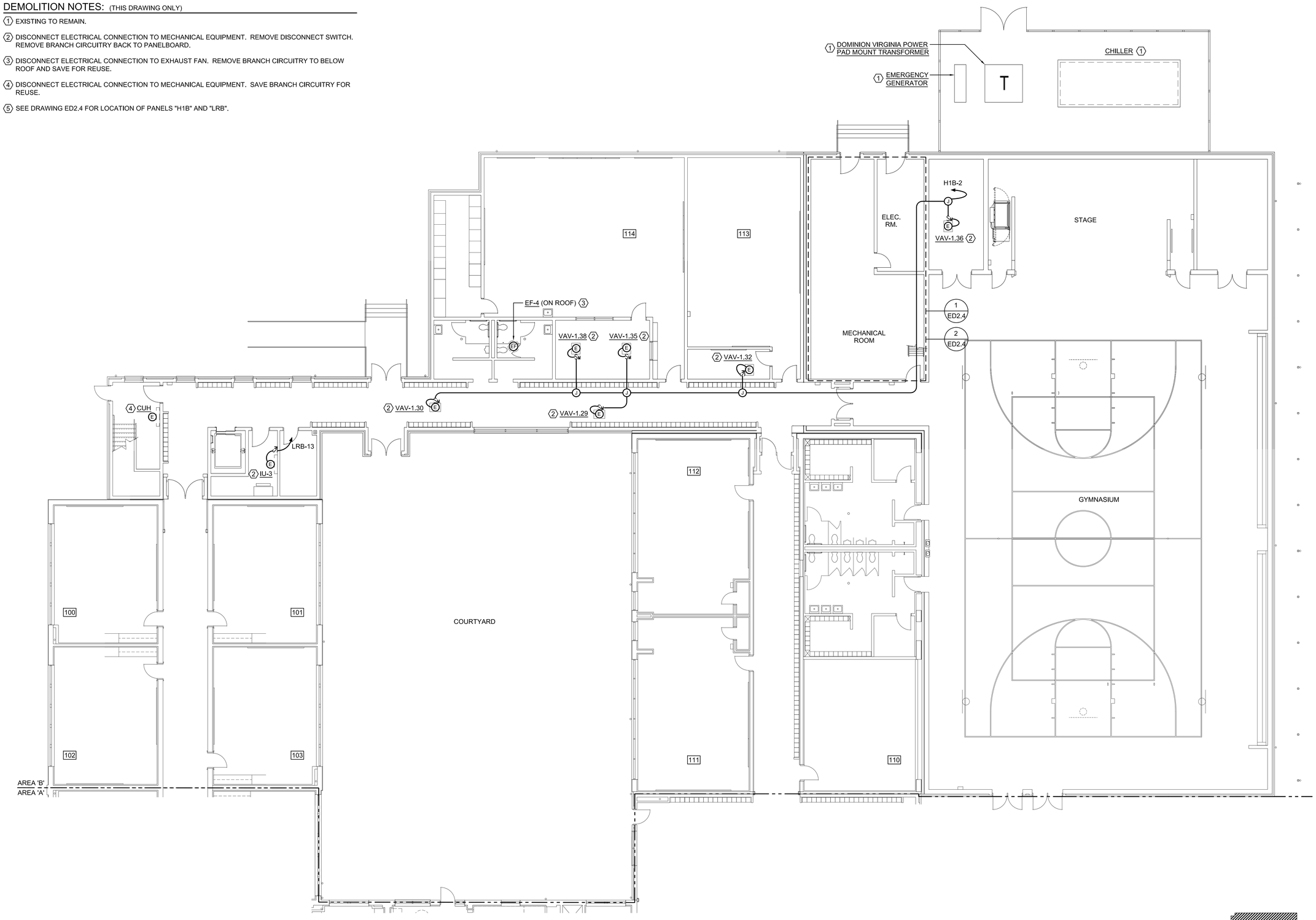
COMM. NO:	21-156
DESIGNED BY:	CAB
DRAWN BY:	CAB
CHECKED BY:	KC

ED2.1

DATE: 12/20/2024

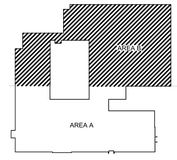
DEMOLITION NOTES: (THIS DRAWING ONLY)

1. EXISTING TO REMAIN.
2. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. REMOVE DISCONNECT SWITCH. REMOVE BRANCH CIRCUITRY BACK TO PANELBOARD.
3. DISCONNECT ELECTRICAL CONNECTION TO EXHAUST FAN. REMOVE BRANCH CIRCUITRY TO BELOW ROOF AND SAVE FOR REUSE.
4. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. SAVE BRANCH CIRCUITRY FOR REUSE.
5. SEE DRAWING ED2.4 FOR LOCATION OF PANELS "H1B" AND "LRB".



PARTIAL FIRST FLOOR PLAN - AREA 'A' - HVAC POWER - DEMOLITION 5

SCALE: 1/8" = 1'-0"



KEY PLAN
NOT TO SCALE

TRUE NORTH

COMMONWEALTH OF VIRGINIA
KENZIE CAMBAR
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA
PARTIAL FIRST FLOOR PLAN - AREA 'B' - HVAC POWER - DEMOLITION

REVISIONS

MARK	DESCRIPTION	DATE

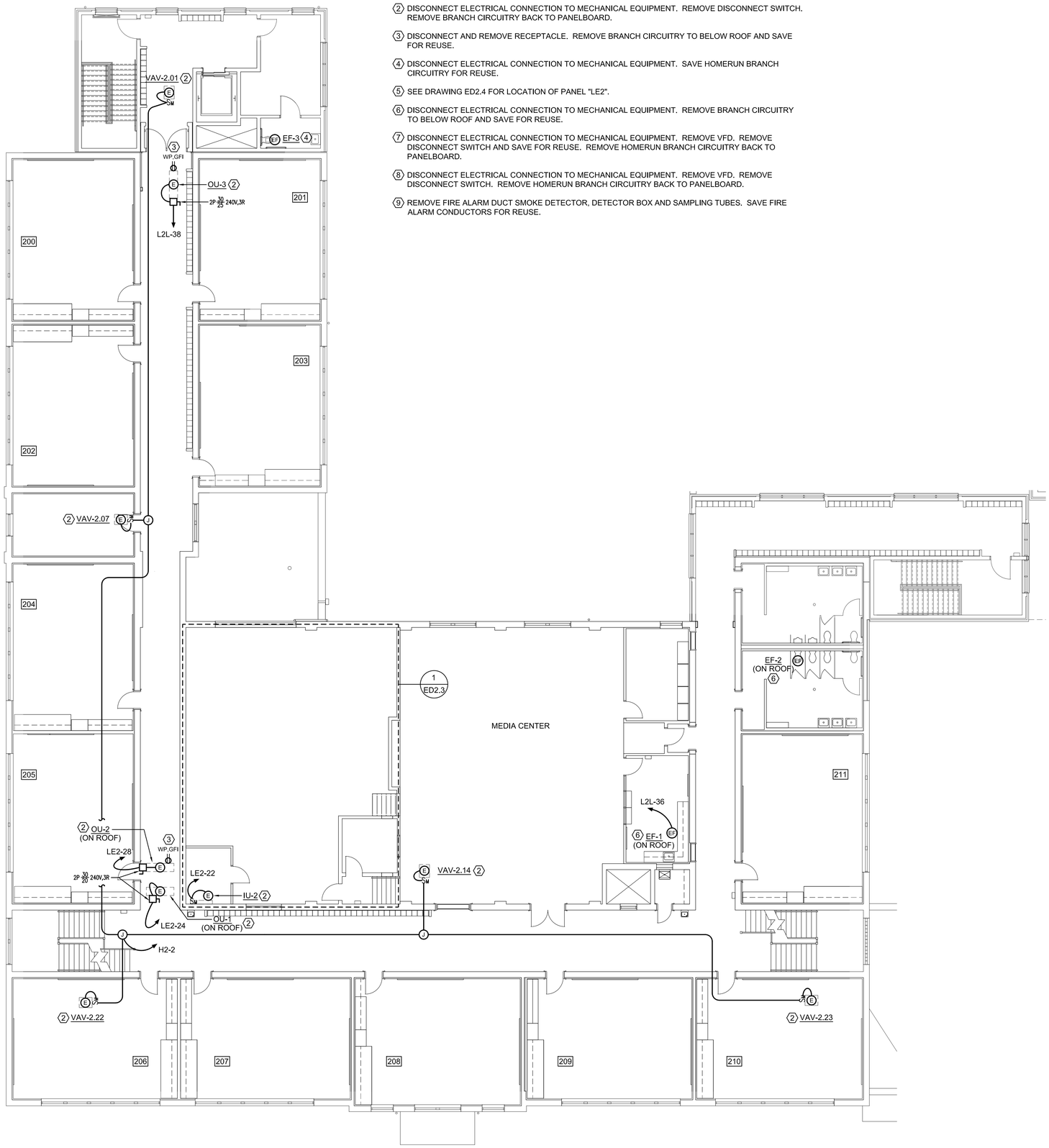
COMM. NO:	21-156
DESIGNED BY:	CAB
DRAWN BY:	CAB
CHECKED BY:	KC

ED2.2

DATE: 12/20/2024

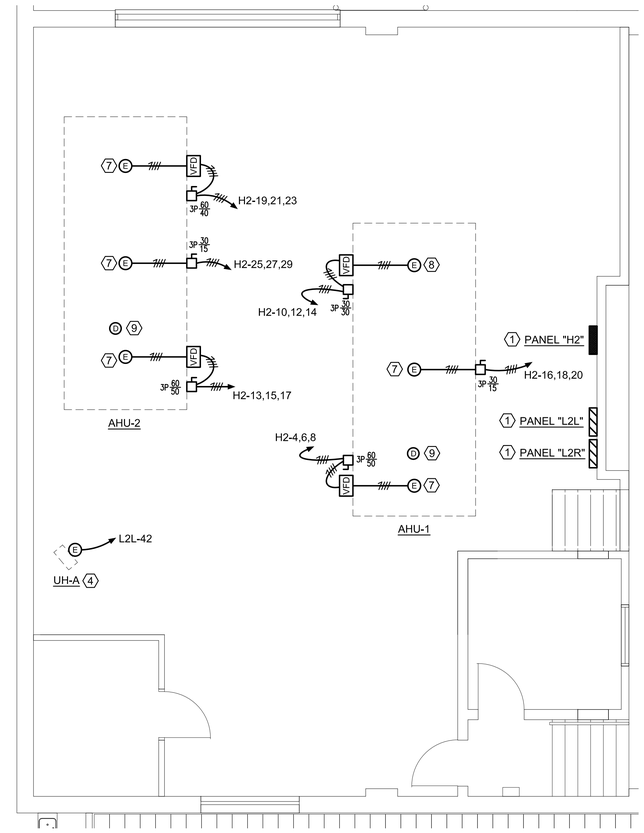
DEMOLITION NOTES: (THIS DRAWING ONLY)

1. EXISTING TO REMAIN.
2. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. REMOVE DISCONNECT SWITCH. REMOVE BRANCH CIRCUITRY BACK TO PANELBOARD.
3. DISCONNECT AND REMOVE RECEPTACLE. REMOVE BRANCH CIRCUITRY TO BELOW ROOF AND SAVE FOR REUSE.
4. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. SAVE HOMERUN BRANCH CIRCUITRY FOR REUSE.
5. SEE DRAWING ED2.4 FOR LOCATION OF PANEL "LE2".
6. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. REMOVE BRANCH CIRCUITRY TO BELOW ROOF AND SAVE FOR REUSE.
7. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. REMOVE VFD. REMOVE DISCONNECT SWITCH AND SAVE FOR REUSE. REMOVE HOMERUN BRANCH CIRCUITRY BACK TO PANELBOARD.
8. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. REMOVE VFD. REMOVE DISCONNECT SWITCH. REMOVE HOMERUN BRANCH CIRCUITRY BACK TO PANELBOARD.
9. REMOVE FIRE ALARM DUCT SMOKE DETECTOR, DETECTOR BOX AND SAMPLING TUBES. SAVE FIRE ALARM CONDUCTORS FOR REUSE.



SECOND FLOOR PLAN - HVAC POWER - DEMOLITION (5)

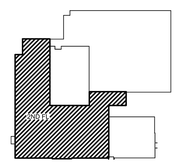
SCALE: 1/8" = 1'-0"



ENLARGED SECOND FLOOR PLAN - MECHANICAL ROOM - HVAC POWER - DEMOLITION

SCALE: 1/4" = 1'-0"

1 ED2.3



KEY PLAN

NOT TO SCALE

TRUE NORTH

COMMONWEALTH OF VIRGINIA
KENZIE CAMBAR
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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS
VIRGINIA

SECOND FLOOR PLAN - HVAC POWER - DEMOLITION

REVISIONS

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COMM. NO:	21-156
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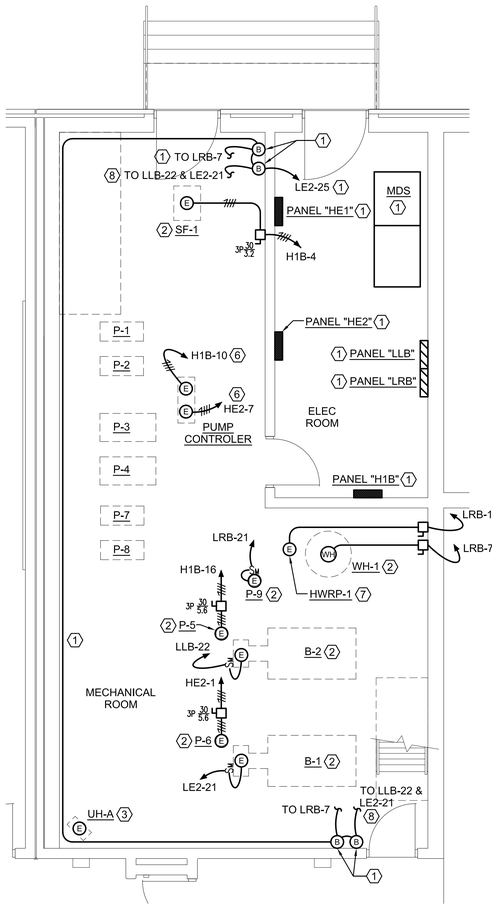
DRAWN BY:	CAB
CHECKED BY:	KC

ED2.3

DATE: 12/20/2024

DEMOLITION NOTES: (THIS DRAWING ONLY)

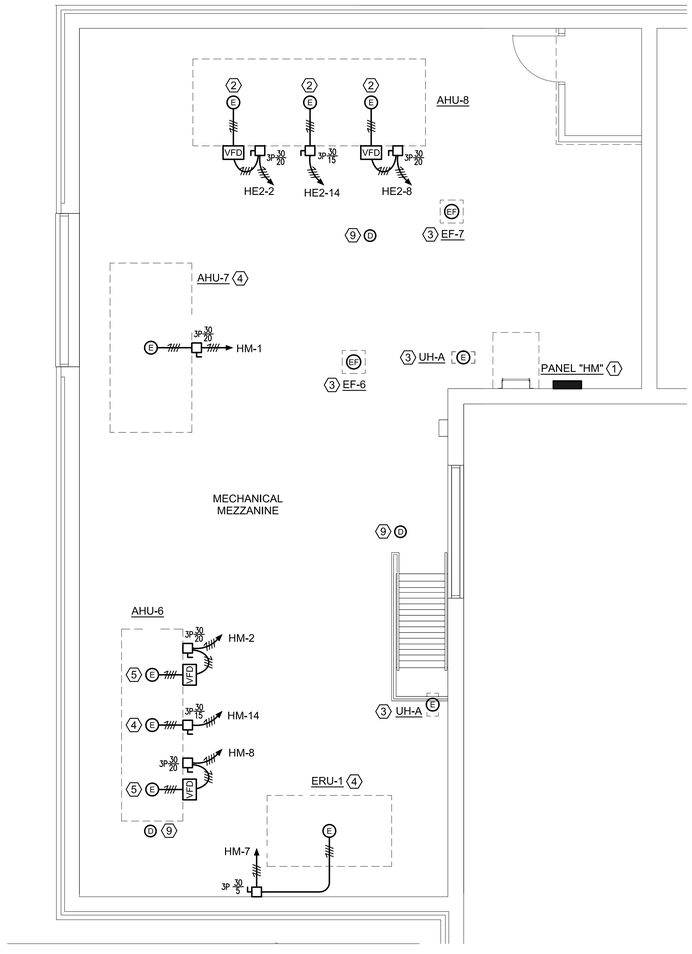
1. EXISTING TO REMAIN.
2. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. REMOVE DISCONNECT SWITCH. REMOVE HOMERUN BRANCH CIRCUITRY BACK TO PANELBOARD.
3. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. SAVE BRANCH CIRCUITRY FOR REUSE.
4. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. REMOVE DISCONNECT SWITCH AND SAVE FOR REUSE. SAVE HOMERUN BRANCH CIRCUITRY FOR REUSE.
5. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. REMOVE VFD. REMOVE DISCONNECT SWITCH AND SAVE FOR REUSE. SAVE HOMERUN BRANCH CIRCUITRY FOR REUSE.
6. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. REMOVE HOMERUN BRANCH CIRCUITRY BACK TO PANELBOARD.
7. DISCONNECT ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. REMOVE BRANCH CIRCUITRY BACK TO DISCONNECT SWITCH. SAVE DISCONNECT SWITCH AND HOMERUN BRANCH CIRCUITRY FOR REUSE.
8. REMOVE BRANCH CIRCUITRY BACK TO EMERGENCY PUSHBUTTON.
9. REMOVE FIRE ALARM DUCT SMOKE DETECTOR, DETECTOR BOX AND SAMPLING TUBES. SAVE FIRE ALARM CONDUCTORS FOR REUSE.



ENLARGED FIRST FLOOR PLAN - MECHANICAL ROOM - HVAC POWER - DEMOLITION

SCALE: 1/4" = 1'-0"

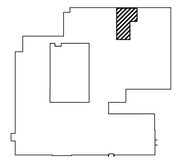
1 ED2.2



ENLARGED SECOND FLOOR PLAN - MECHANICAL MEZZANINE - HVAC POWER - DEMOLITION

SCALE: 1/4" = 1'-0"

2 ED2.2



KEY PLAN

NOT TO SCALE

TRUE NORTH

KENZIE CAMBAR
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12/20/2024

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA

ENLARGED FLOOR PLANS - HVAC POWER - DEMOLITION

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO:	21-156
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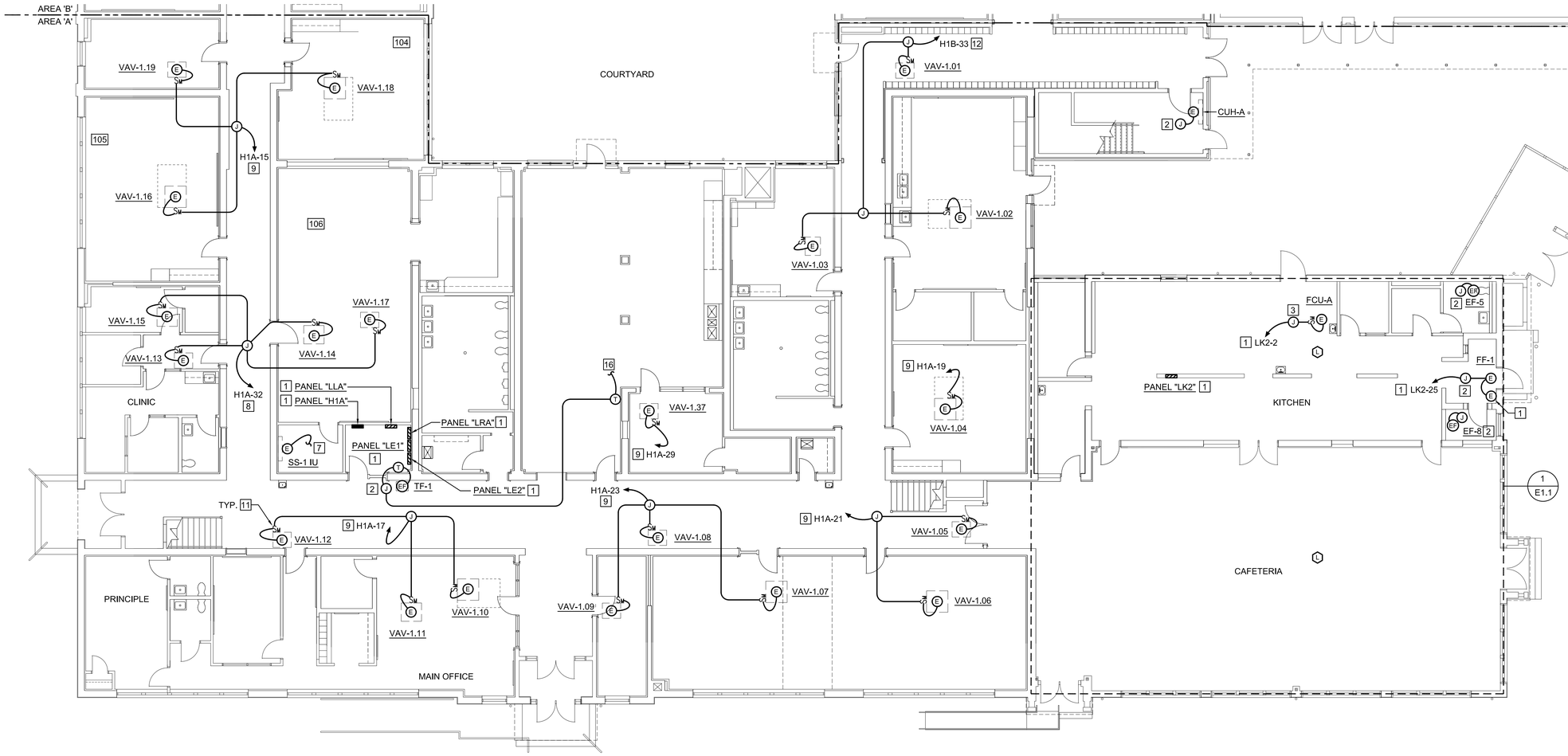
CHECKED BY:	KC

ED2.4

DATE: 12/20/2024

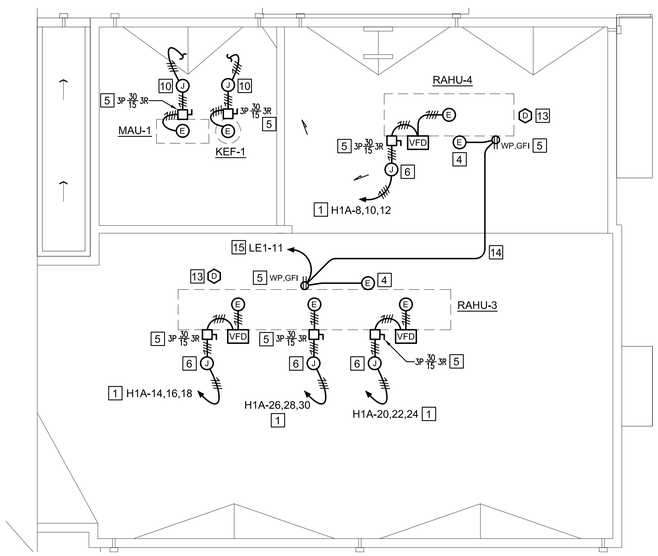


PARTIAL FIRST FLOOR PLAN - AREA 'A' - HVAC POWER - NEW WORK

SCALE: 1/8" = 1'-0"

NEW WORK NOTES: (THIS DRAWING ONLY)

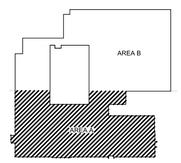
1. EXISTING REUSED.
2. PROVIDE JUNCTION BOX ON END OF EXISTING BRANCH CIRCUITRY SAVED DURING DEMOLITION. PROVIDE NEW BRANCH CIRCUITRY FROM JUNCTION BOX TO NEW ELECTRICAL CONNECTION.
3. PROVIDE JUNCTION BOX ON END OF EXISTING HOMERUN BRANCH CIRCUITRY SAVED DURING DEMOLITION. PROVIDE NEW BRANCH CIRCUITRY FROM JUNCTION BOX TO NEW DISCONNECT SWITCH AND FROM NEW DISCONNECT SWITCH TO NEW ELECTRICAL CONNECTION.
4. PROVIDE ELECTRICAL CONNECTION TO HEAT TRACE. CONNECT BRANCH CIRCUITRY TO NEW GFI RECEPTACLE.
5. PROVIDE A PEDESTAL; ORBIT INDUSTRIES CATALOG # PP60B, OR APPROVED EQUAL, FOR MOUNTING OF DISCONNECT SWITCH AND RECEPTACLE SERVING THIS EQUIPMENT. COORDINATE INSTALLATION AND LOCATION WITH ROOFING CONTRACTOR AND DIVISION 23 CONTRACTOR.
6. PROVIDE JUNCTION BOX ON END OF EXISTING BRANCH CIRCUITRY SAVED DURING DEMOLITION. PROVIDE 3 #12 AND 1 #12 GND. IN 1/2" CONDUIT, RUN BELOW ROOF AND UP THROUGH PEDESTAL ON ROOF TO EXISTING DISCONNECT SWITCH SAVED DURING DEMOLITION. PROVIDE NEW FUSES. PROVIDE 3 #12 AND 1 #12 GND. IN 1/2" CONDUIT FROM DISCONNECT SWITCH TO NEW ELECTRICAL CONNECTION.
7. SEE DRAWING E1.3 FOR CONTINUATION.
8. CONNECT HOMERUN BRANCH CIRCUITRY TO EXISTING 15A-1P CIRCUIT BREAKER MADE AVAILABLE DURING DEMOLITION.
9. PROVIDE ONE (1) 15A-1P CIRCUIT BREAKER IN PANEL AND SPACE INDICATED. CONNECT HOMERUN BRANCH CIRCUITRY TO NEW CIRCUIT BREAKER. EXISTING PANEL "H1A" IS A 480Y/277V, 400A, 3-PHASE, 4-WIRE, GENERAL ELECTRIC SPECTRA SERIES PANELBOARD.
10. PROVIDE JUNCTION BOX ON END OF EXISTING BRANCH CIRCUITRY SAVED DURING DEMOLITION. PROVIDE 3 #12 AND 1 #12 GND. IN 1/2" CONDUIT, RUN BELOW ROOF AND UP THROUGH ROOF TO NEW DISCONNECT SWITCH. PROVIDE 3 #12 AND 1 #12 GND. IN 1/2" CONDUIT FROM DISCONNECT SWITCH TO NEW ELECTRICAL CONNECTION.
11. INSTALL DISCONNECT SWITCH ON WALL OR BAR JOIST PER N.E.C. REQUIREMENTS.
12. PROVIDE ONE (1) 15A-1P CIRCUIT BREAKER IN PANEL AND SPACE INDICATED. CONNECT HOMERUN BRANCH CIRCUITRY TO NEW CIRCUIT BREAKER. EXISTING PANEL "H1B" IS A 480Y/277V, 125A, 3-PHASE, 4-WIRE, GENERAL ELECTRIC 'A SERIES' PANELBOARD. SEE DRAWING E1.4 FOR LOCATION OF PANEL "H1B".
13. PROVIDE DUCT SMOKE DETECTOR WITH SAMPLING TUBES. COORDINATE WITH MECHANICAL FOR EXACT LOCATION OF DUCT SMOKE DETECTOR. DUCT SMOKE DETECTOR SHALL BE FURNISHED BY ELECTRICAL CONTRACTOR AND INSTALLED IN DUCT WORK BY DIVISION 23 CONTRACTOR AND CONNECTED TO FIRE ALARM SYSTEM BY ELECTRICAL CONTRACTOR. CONNECT TO EXISTING FIRE ALARM CONDUCTORS SAVED DURING DEMOLITION.
14. BRANCH CIRCUITRY TO BE RUN CONCEALED INSIDE BUILDING.
15. PROVIDE ONE (1) 15A-1P CIRCUIT BREAKER IN PANEL AND SPACE INDICATED. CONNECT HOMERUN BRANCH CIRCUITRY TO NEW CIRCUIT BREAKER. EXISTING PANEL "LE1" IS A 208Y/120V, 125A, 3-PHASE, 4-WIRE, GENERAL ELECTRIC 'A SERIES' PANELBOARD.
16. TO 'DHC-1' SERVING 'AHU-5'. SEE MECHANICAL DRAWINGS FOR LOCATIONS OF 'DHC-1' AND LINE VOLTAGE THERMOSTAT.



PARTIAL ROOF PLAN - AREA 'A' - HVAC POWER - NEW WORK

SCALE: 1/8" = 1'-0"

1 / E1.1



KEY PLAN

NOT TO SCALE

TRUE NORTH

COMMONWEALTH OF VIRGINIA
KENZIE CAMBAR
Lic. No.049752
12/20/2024
PROFESSIONAL ENGINEER

THOMPSON
Consulting Engineers
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TELEPHONE: (757) 599-6435 PROJECT NUMBER: 21-156

HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS
VIRGINIA
PARTIAL FIRST FLOOR PLAN - AREA 'A' - HVAC POWER - NEW WORK

REVISIONS

MARK	DESCRIPTION	DATE

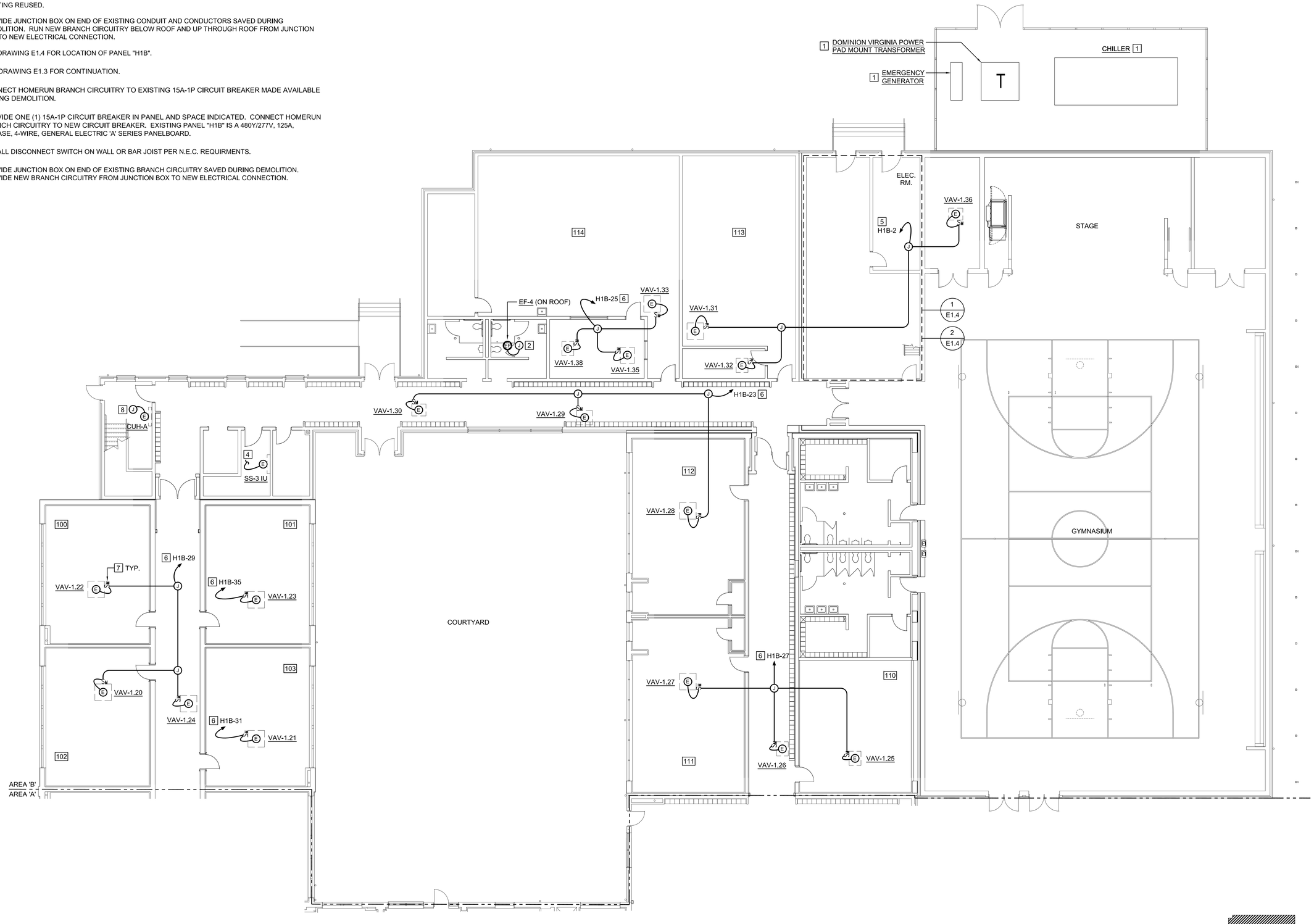
COMM. NO:	21-156
DESIGNED BY:	CAB
DRAWN BY:	CAB
CHECKED BY:	KC

E1.1

DATE: 12/20/2024

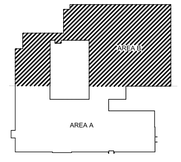
NEW WORK NOTES: (THIS DRAWING ONLY)

1. EXISTING REUSED.
2. PROVIDE JUNCTION BOX ON END OF EXISTING CONDUIT AND CONDUCTORS SAVED DURING DEMOLITION. RUN NEW BRANCH CIRCUITRY BELOW ROOF AND UP THROUGH ROOF FROM JUNCTION BOX TO NEW ELECTRICAL CONNECTION.
3. SEE DRAWING E1.4 FOR LOCATION OF PANEL "H1B".
4. SEE DRAWING E1.3 FOR CONTINUATION.
5. CONNECT HOMERUN BRANCH CIRCUITRY TO EXISTING 15A-1P CIRCUIT BREAKER MADE AVAILABLE DURING DEMOLITION.
6. PROVIDE ONE (1) 15A-1P CIRCUIT BREAKER IN PANEL AND SPACE INDICATED. CONNECT HOMERUN BRANCH CIRCUITRY TO NEW CIRCUIT BREAKER. EXISTING PANEL "H1B" IS A 480Y/277V, 125A, 3-PHASE, 4-WIRE, GENERAL ELECTRIC 'A' SERIES PANELBOARD.
7. INSTALL DISCONNECT SWITCH ON WALL OR BAR JOIST PER N.E.C. REQUIRMENTS.
8. PROVIDE JUNCTION BOX ON END OF EXISTING BRANCH CIRCUITRY SAVED DURING DEMOLITION. PROVIDE NEW BRANCH CIRCUITRY FROM JUNCTION BOX TO NEW ELECTRICAL CONNECTION.



PARTIAL FIRST FLOOR PLAN - AREA 'B' - HVAC POWER - NEW WORK

SCALE: 1/8" = 1'-0"



KEY PLAN
NOT TO SCALE

TRUE NORTH

COMMONWEALTH OF VIRGINIA
KENZIE CAMBAR
Lic. No.049752
PROFESSIONAL ENGINEER
12/20/2024

THOMPSON
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22 ENTERPRISE PARKWAY HAMPTON, VA 23666
TELEPHONE: (757) 599-6415 PROJECT NUMBER: 21-156

HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA

PARTIAL FIRST FLOOR PLAN - AREA 'B' - HVAC POWER - NEW WORK

REVISIONS

MARK	DESCRIPTION	DATE

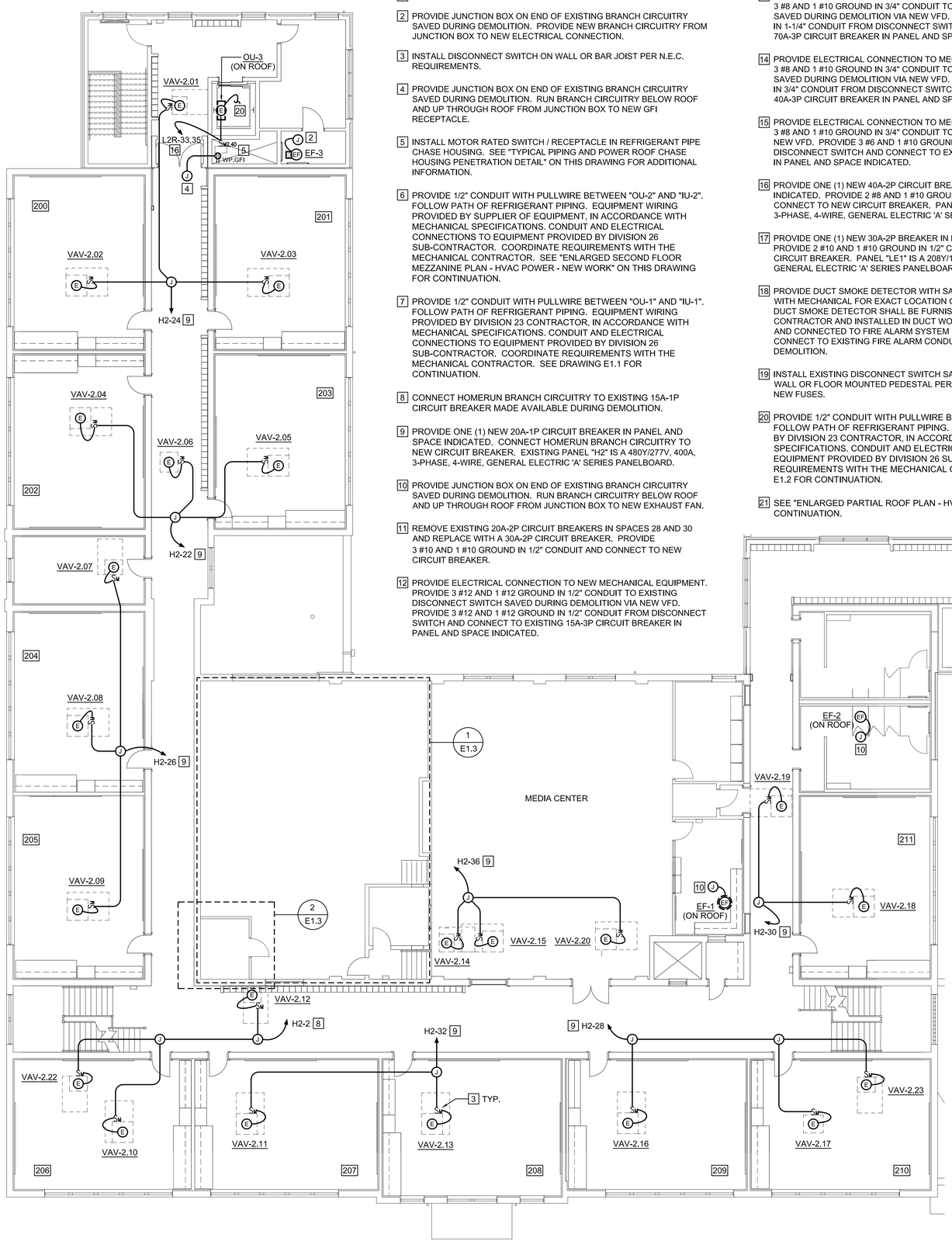
COMM. NO:	21-156
DESIGNED BY:	CAB
DRAWN BY:	CAB
CHECKED BY:	KC

E1.2

DATE: 12/20/2024

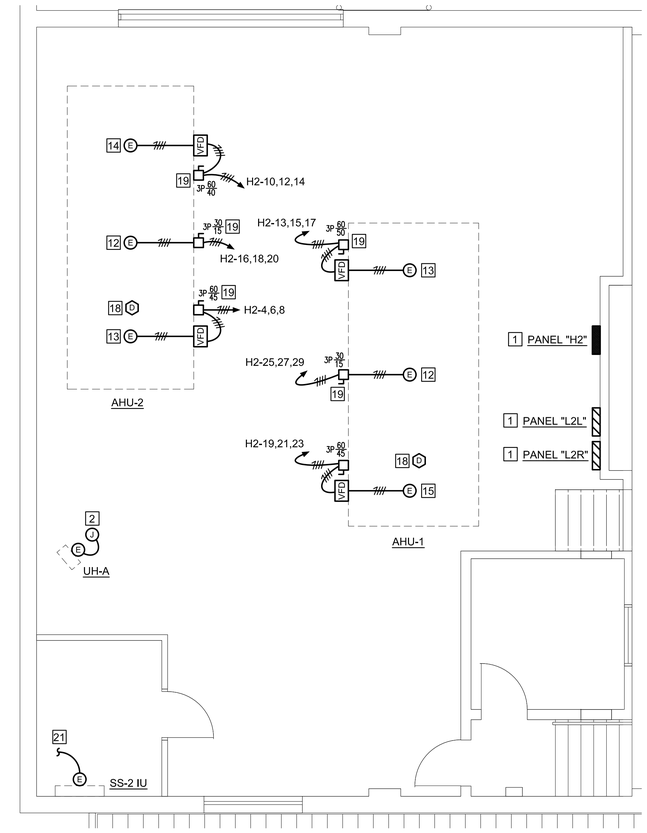
NEW WORK NOTES: (THIS DRAWING ONLY)

1. EXISTING REUSED.
2. PROVIDE JUNCTION BOX ON END OF EXISTING BRANCH CIRCUITRY SAVED DURING DEMOLITION. PROVIDE NEW BRANCH CIRCUITRY FROM JUNCTION BOX TO NEW ELECTRICAL CONNECTION.
3. INSTALL DISCONNECT SWITCH ON WALL OR BAR JOIST PER N.E.C. REQUIREMENTS.
4. PROVIDE JUNCTION BOX ON END OF EXISTING BRANCH CIRCUITRY SAVED DURING DEMOLITION. RUN BRANCH CIRCUITRY BELOW ROOF AND UP THROUGH ROOF FROM JUNCTION BOX TO NEW GFI RECEPTACLE.
5. INSTALL MOTOR RATED SWITCH / RECEPTACLE IN REFRIGERANT PIPE CHASE HOUSING. SEE "TYPICAL PIPING AND POWER ROOF CHASE HOUSING PENETRATION DETAIL" ON THIS DRAWING FOR ADDITIONAL INFORMATION.
6. PROVIDE 1/2" CONDUIT WITH PULLWIRE BETWEEN "OU-2" AND "IU-2". FOLLOW PATH OF REFRIGERANT PIPING. EQUIPMENT WIRING PROVIDED BY SUPPLIER OF EQUIPMENT, IN ACCORDANCE WITH MECHANICAL SPECIFICATIONS. CONDUIT AND ELECTRICAL CONNECTIONS TO EQUIPMENT PROVIDED BY DIVISION 26 SUB-CONTRACTOR. COORDINATE REQUIREMENTS WITH THE MECHANICAL CONTRACTOR. SEE "ENLARGED SECOND FLOOR MEZZANINE PLAN - HVAC POWER - NEW WORK" ON THIS DRAWING FOR CONTINUATION.
7. PROVIDE 1/2" CONDUIT WITH PULLWIRE BETWEEN "OU-1" AND "IU-1". FOLLOW PATH OF REFRIGERANT PIPING. EQUIPMENT WIRING PROVIDED BY DIVISION 23 CONTRACTOR, IN ACCORDANCE WITH MECHANICAL SPECIFICATIONS. CONDUIT AND ELECTRICAL CONNECTIONS TO EQUIPMENT PROVIDED BY DIVISION 26 SUB-CONTRACTOR. COORDINATE REQUIREMENTS WITH THE MECHANICAL CONTRACTOR. SEE DRAWING E1.1 FOR CONTINUATION.
8. CONNECT HOMERUN BRANCH CIRCUITRY TO EXISTING 15A-1P CIRCUIT BREAKER MADE AVAILABLE DURING DEMOLITION.
9. PROVIDE ONE (1) NEW 20A-1P CIRCUIT BREAKER IN PANEL AND SPACE INDICATED. CONNECT HOMERUN BRANCH CIRCUITRY TO NEW CIRCUIT BREAKER. EXISTING PANEL "H2" IS A 480Y/277V, 400A, 3-PHASE, 4-WIRE, GENERAL ELECTRIC 'A' SERIES PANELBOARD.
10. PROVIDE JUNCTION BOX ON END OF EXISTING BRANCH CIRCUITRY SAVED DURING DEMOLITION. RUN BRANCH CIRCUITRY BELOW ROOF AND UP THROUGH ROOF FROM JUNCTION BOX TO NEW EXHAUST FAN.
11. REMOVE EXISTING 20A-2P CIRCUIT BREAKERS IN SPACES 28 AND 30 AND REPLACE WITH A 30A-2P CIRCUIT BREAKER. PROVIDE 3 #10 AND 1 #10 GROUND IN 1/2" CONDUIT AND CONNECT TO NEW CIRCUIT BREAKER.
12. PROVIDE ELECTRICAL CONNECTION TO NEW MECHANICAL EQUIPMENT. PROVIDE 3 #12 AND 1 #12 GROUND IN 1/2" CONDUIT TO EXISTING DISCONNECT SWITCH SAVED DURING DEMOLITION VIA NEW VFD. PROVIDE 3 #12 AND 1 #12 GROUND IN 1/2" CONDUIT FROM DISCONNECT SWITCH AND CONNECT TO EXISTING 15A-3P CIRCUIT BREAKER IN PANEL AND SPACE INDICATED.
13. PROVIDE ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. PROVIDE 3 #8 AND 1 #10 GROUND IN 3/4" CONDUIT TO EXISTING DISCONNECT SWITCH SAVED DURING DEMOLITION VIA NEW VFD. PROVIDE 3 #4 AND 1 #8 GROUND IN 1-1/4" CONDUIT FROM DISCONNECT SWITCH AND CONNECT TO EXISTING 70A-3P CIRCUIT BREAKER IN PANEL AND SPACE INDICATED.
14. PROVIDE ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. PROVIDE 3 #8 AND 1 #10 GROUND IN 3/4" CONDUIT TO EXISTING DISCONNECT SWITCH SAVED DURING DEMOLITION VIA NEW VFD. PROVIDE 3 #8 AND 1 #10 GROUND IN 3/4" CONDUIT FROM DISCONNECT SWITCH AND CONNECT TO EXISTING 40A-3P CIRCUIT BREAKER IN PANEL AND SPACE INDICATED.
15. PROVIDE ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. PROVIDE 3 #8 AND 1 #10 GROUND IN 3/4" CONDUIT TO NEW DISCONNECT SWITCH VIA NEW VFD. PROVIDE 3 #6 AND 1 #10 GROUND IN 1" CONDUIT FROM DISCONNECT SWITCH AND CONNECT TO EXISTING 60A-3P CIRCUIT BREAKER IN PANEL AND SPACE INDICATED.
16. PROVIDE ONE (1) NEW 40A-2P CIRCUIT BREAKER IN PANEL AND SPACE INDICATED. PROVIDE 2 #6 AND 1 #10 GROUND IN 3/4" CONDUIT AND CONNECT TO NEW CIRCUIT BREAKER. PANEL "L2R" IS A 208Y/120V, 400A, 3-PHASE, 4-WIRE, GENERAL ELECTRIC 'A' SERIES PANELBOARD.
17. PROVIDE ONE (1) NEW 30A-2P BREAKER IN PANEL AND SPACE INDICATED. PROVIDE 2 #10 AND 1 #10 GROUND IN 1/2" CONDUIT AND CONNECT TO NEW CIRCUIT BREAKER. PANEL "LE1" IS A 208Y/120V, 125A, 3-PHASE, 4-WIRE, GENERAL ELECTRIC 'A' SERIES PANELBOARD.
18. PROVIDE DUCT SMOKE DETECTOR WITH SAMPLING TUBES. COORDINATE WITH MECHANICAL FOR EXACT LOCATION OF DUCT SMOKE DETECTOR. DUCT SMOKE DETECTOR SHALL BE FURNISHED BY ELECTRICAL CONTRACTOR AND INSTALLED IN DUCT WORK BY DIVISION 23 CONTRACTOR AND CONNECTED TO FIRE ALARM SYSTEM BY ELECTRICAL CONTRACTOR. CONNECT TO EXISTING FIRE ALARM CONDUCTORS SAVED DURING DEMOLITION.
19. INSTALL EXISTING DISCONNECT SWITCH SAVED DURING DEMOLITION ON WALL OR FLOOR MOUNTED PEDESTAL PER N.E.C. REQUIREMENTS. PROVIDE NEW FUSES.
20. PROVIDE 1/2" CONDUIT WITH PULLWIRE BETWEEN "OU-3" AND "IU-3". FOLLOW PATH OF REFRIGERANT PIPING. EQUIPMENT WIRING PROVIDED BY DIVISION 23 CONTRACTOR, IN ACCORDANCE WITH MECHANICAL SPECIFICATIONS. CONDUIT AND ELECTRICAL CONNECTIONS TO EQUIPMENT PROVIDED BY DIVISION 26 SUB-CONTRACTOR. COORDINATE REQUIREMENTS WITH THE MECHANICAL CONTRACTOR. SEE DRAWING E1.2 FOR CONTINUATION.
21. SEE "ENLARGED PARTIAL ROOF PLAN - HVAC POWER - NEW WORK" FOR CONTINUATION.



SECOND FLOOR PLAN - HVAC POWER - NEW WORK

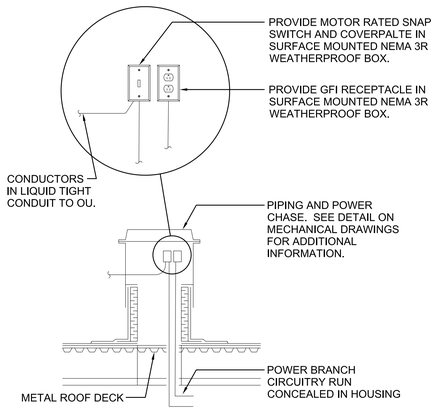
SCALE: 1/8" = 1'-0"



ENLARGED SECOND FLOOR PLAN - MECHANICAL ROOM - HVAC POWER - NEW WORK

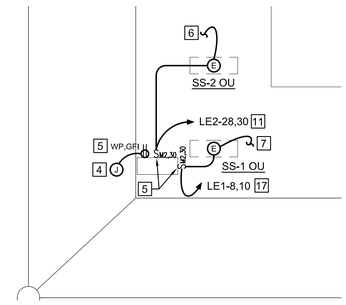
SCALE: 1/4" = 1'-0"

1 / E1.3



TYPICAL PIPING AND POWER ROOF CHASE HOUSING PENETRATION DETAIL

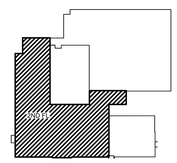
NOT TO SCALE



ENLARGED PARTIAL ROOF PLAN - HVAC POWER - NEW WORK

SCALE: 1/4" = 1'-0"

2 / E1.3



NOT TO SCALE

TRUE NORTH

COMMONWEALTH OF VIRGINIA
KENZIE CAMBAR
Lic. No.049752
12/20/2024
PROFESSIONAL ENGINEER

THOMPSON
Consulting Engineers
22 ENTERPRISE PARKWAY HAMPTON, VA 23666
TELEPHONE: (757) 599-6415 PROJECT NUMBER: 21-156

HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA

SECOND FLOOR PLAN - HVAC POWER - NEW WORK

REVISIONS

MARK	DESCRIPTION	DATE

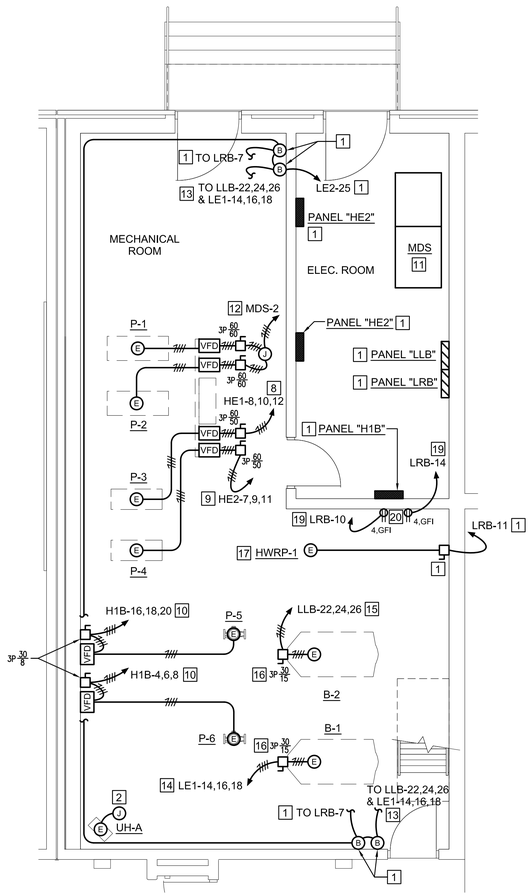
COMM. NO:	21-156
DESIGNED BY:	CAB
DRAWN BY:	CAB
CHECKED BY:	KC

E1.3

DATE: 12/20/2024

NEW WORK NOTES: (THIS DRAWING ONLY)

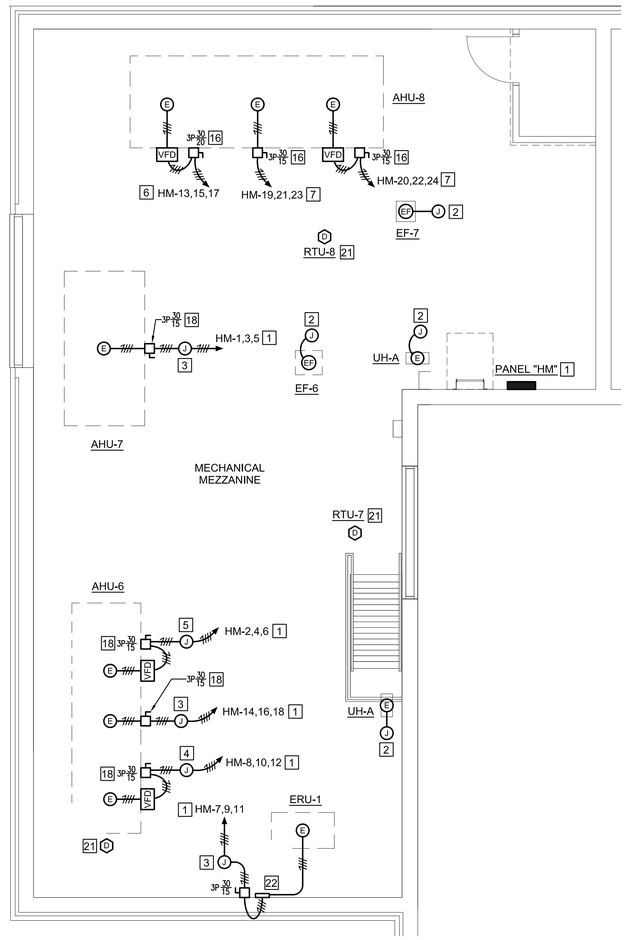
1. EXISTING REUSED.
2. PROVIDE JUNCTION BOX ON END OF EXISTING BRANCH CIRCUITRY SAVED DURING DEMOLITION. PROVIDE NEW BRANCH CIRCUITRY FROM JUNCTION BOX TO NEW ELECTRICAL CONNECTION.
3. PROVIDE JUNCTION BOX ON END OF EXISTING HOMERUN BRANCH CIRCUITRY SAVED DURING DEMOLITION. PROVIDE NEW BRANCH CIRCUITRY, 3 #12 AND 1 #12 GROUND IN 1/2" CONDUIT, FROM JUNCTION BOX TO EXISTING DISCONNECT SWITCH SAVED DURING DEMOLITION AND FROM EXISTING DISCONNECT SWITCH TO NEW ELECTRICAL CONNECTION.
4. PROVIDE JUNCTION BOX ON END OF EXISTING HOMERUN BRANCH CIRCUITRY SAVED DURING DEMOLITION. PROVIDE NEW BRANCH CIRCUITRY, 3 #12 AND 1 #12 GROUND IN 1/2" CONDUIT, FROM JUNCTION BOX TO EXISTING DISCONNECT SWITCH SAVED DURING DEMOLITION. PROVIDE NEW BRANCH CIRCUITRY, 3 #12 AND 1 #12 GROUND IN 1/2" CONDUIT, FROM EXISTING DISCONNECT SWITCH TO VFD AND FROM VFD TO NEW ELECTRICAL CONNECTION.
5. PROVIDE JUNCTION BOX ON END OF EXISTING HOMERUN BRANCH CIRCUITRY SAVED DURING DEMOLITION. PROVIDE 3 #10 AND 1 #10 GROUND IN 1/2" CONDUIT FROM JUNCTION BOX TO EXISTING DISCONNECT SWITCH SAVED DURING DEMOLITION. PROVIDE 3 #10 AND 1 #10 GROUND IN 1/2" CONDUIT FROM EXISTING DISCONNECT SWITCH TO VFD AND FROM VFD TO NEW ELECTRICAL CONNECTION.
6. PROVIDE 3 #10 AND 1 #10 GROUND IN 1/2" CONDUIT AND CONNECT TO EXISTING SPARE 25A-3P CIRCUIT BREAKER IN PANEL AND SPACES INDICATED.
7. PROVIDE ONE (1) NEW 15A-3P CIRCUIT BREAKER IN PANEL AND SPACES INDICATED. PROVIDE 3 #12 AND 1 #12 GROUND IN 1/2" CONDUIT AND CONNECT TO NEW CIRCUIT BREAKER. EXISTING PANEL "HM" IS A 480Y/277V, 125A, 3-PHASE, 4-WIRE, GENERAL ELECTRIC 'A' SERIES PANELBOARD.
8. PROVIDE ONE (1) NEW 70A-3P CIRCUIT BREAKER IN PANEL AND SPACES INDICATED. PROVIDE 3 #4 AND 1 #8 GROUND IN 1" CONDUIT AND CONNECT TO NEW CIRCUIT BREAKER. EXISTING PANEL "HE1" IS A 480Y/277V, 125A, 3-PHASE, 4-WIRE, GENERAL ELECTRIC 'A' SERIES PANELBOARD.
9. PROVIDE ONE (1) NEW 70A-3P CIRCUIT BREAKER IN PANEL AND SPACES INDICATED. PROVIDE 3 #4 AND 1 #8 GROUND IN 1" CONDUIT AND CONNECT TO NEW CIRCUIT BREAKER. EXISTING PANEL "HE2" IS A 480Y/277V, 125A, 3-PHASE, 4-WIRE, GENERAL ELECTRIC 'A' SERIES PANELBOARD.
10. CONNECT HOMERUN BRANCH CIRCUITRY TO EXISTING 15A-3P CIRCUIT BREAKER MADE AVAILABLE DURING DEMOLITION.
11. DISCONNECT AND REMOVE EXISTING 60A-3P CIRCUIT BREAKER SERVING THE ELEVATOR IN EXISTING "MDS". PROVIDE NEW GENERAL ELECTRIC 'TMAX XT' RETROFIT KIT, MODEL NUMBER SRFB6XT1FPX, WITH ONE (1) 60A-3P CIRCUIT BREAKER AND ONE (1) 80A-3P CIRCUIT BREAKER. CONNECT EXISTING ELEVATOR BRANCH CIRCUITRY TO NEW 60A-3P CIRCUIT BREAKER. CONTACT JOHN OGERT WITH BLUE MOUNTAIN SALES, john@bluemountainsales.com or 757-777-7360, FOR ADDITIONAL INFORMATION AND COORDINATION.
12. PROVIDE 3 #4 AND 1 #8 GROUND IN 1-1/4" CONDUIT AND CONNECT TO NEW 80A-3P CIRCUIT BREAKER PROVIDED BY NEW WORK NOTE 11.
13. CONNECT BRANCH CIRCUITRY TO SHUNT TRIP CIRCUIT BREAKERS IN PANELS AND SPACES INDICATED.
14. PROVIDE ONE (1) NEW 15A-3P SHUNT-TRIP TYPE CIRCUIT BREAKER IN PANEL AND SPACES INDICATED. PROVIDE 3 #12 AND 1 #12 GROUND IN 1/2" CONDUIT AND CONNECT TO NEW CIRCUIT BREAKER. EXISTING PANEL "LE1" IS A 208Y/120V, 125A, 3-PHASE, 4-WIRE, GENERAL ELECTRIC 'A' SERIES PANELBOARD.
15. REMOVE EXISTING 20A-2P CIRCUIT BREAKER FROM SPACES 22, 24 AND 15A-1P CIRCUIT BREAKER IN SPACE 26. PROVIDE ONE (1) NEW 15A-3P SHUNT-TRIP TYPE CIRCUIT BREAKER IN PANEL AND SPACES INDICATED. PROVIDE 3 #12 AND 1 #12 GROUND IN 1/2" CONDUIT AND CONNECT TO NEW CIRCUIT BREAKER. EXISTING PANEL "LLB" IS A 208Y/120V, 400A, 3-PHASE, 4-WIRE, GENERAL ELECTRIC 'A' SERIES PANELBOARD.
16. INSTALL NEW DISCONNECT SWITCH ON NON-REMOVABLE PANEL ON MECHANICAL EQUIPMENT.
17. CONNECT BRANCH CIRCUITRY TO EXISTING DISCONNECT SWITCH SAVED DURING DEMOLITION.
18. INSTALL EXISTING DISCONNECT SWITCH SAVED DURING DEMOLITION ON NON-REMOVABLE PANEL ON MECHANICAL EQUIPMENT. PROVIDE NEW FUSES.
19. CONNECT NEW HOMERUN BRANCH CIRCUITRY TO EXISTING SPARE 20A-1P CIRCUIT BREAKER IN PANEL AND SPACE INDICATED.
20. PROVIDE NEW RECEPTACLES TO SERVE NEW PLUG-IN TANKLESS WATER HEATERS. COORDINATE EXACT LOCATION WITH DIVISION 22 CONTRACTOR.
21. PROVIDE DUCT SMOKE DETECTOR WITH SAMPLING TUBES. COORDINATE WITH MECHANICAL FOR EXACT LOCATION OF DUCT SMOKE DETECTOR. DUCT SMOKE DETECTOR SHALL BE FURNISHED BY ELECTRICAL CONTRACTOR AND INSTALLED IN DUCT WORK BY DIVISION 23 CONTRACTOR AND CONNECTED TO FIRE ALARM SYSTEM BY ELECTRICAL CONTRACTOR. CONNECT TO EXISTING FIRE ALARM CONDUCTORS SAVED DURING DEMOLITION.
22. PROVIDE ELECTRICAL CONNECTION TO ERU-1 CONTROL PANEL AS DIRECTED BY DIVISION 23 CONTRACTOR.



ENLARGED FIRST FLOOR PLAN - MECHANICAL ROOM - HVAC POWER - NEW WORK

SCALE: 1/4" = 1'-0"

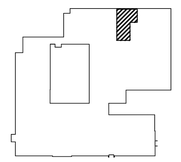
1 / E1.2



ENLARGED SECOND FLOOR PLAN - MECHANICAL MEZZANINE - HVAC POWER - NEW WORK

SCALE: 1/4" = 1'-0"

2 / E1.2



KEY PLAN

NOT TO SCALE

TRUE NORTH

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12/20/2024

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HVAC REPLACEMENT
BOOKER T. WASHINGTON MIDDLE SCHOOL
NEWPORT NEWS VIRGINIA

ENLARGED FLOOR PLANS - HVAC POWER - NEW WORK

REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO:	21-156
DESIGNED BY:	CAB
DRAWN BY:	CAB
CHECKED BY:	KC

E1.4

DATE: 12/20/2024